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HERBARIUM BOTANY.

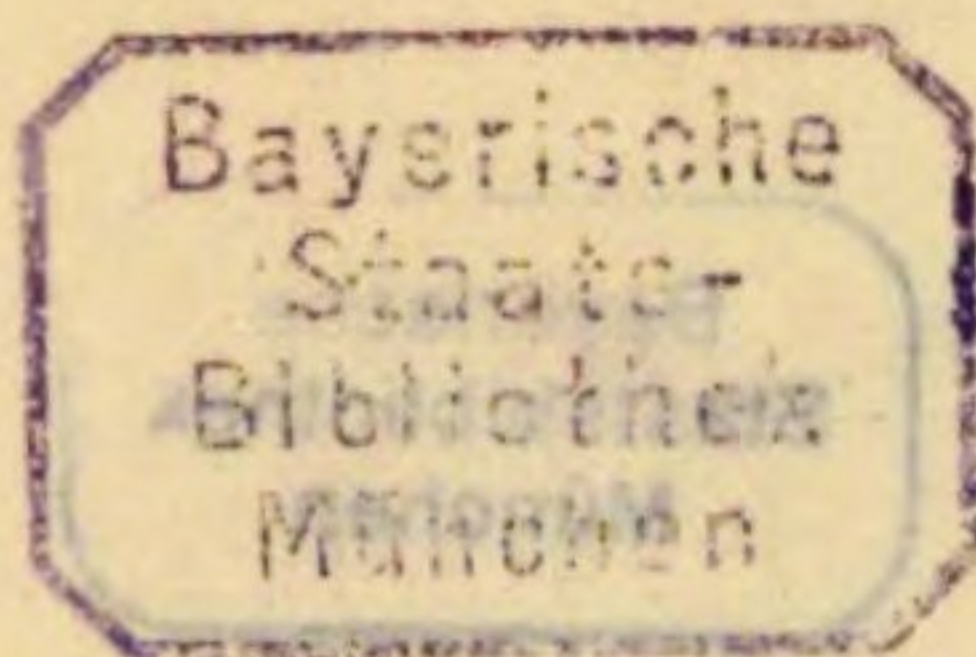
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AMERICAN

MEDICAL BOTANY

VOL. III - PART II



AMERICAN
MEDICAL BOTANY.

VOL. III.—PART. II.

Mat. med. 121 $\frac{m}{b}$

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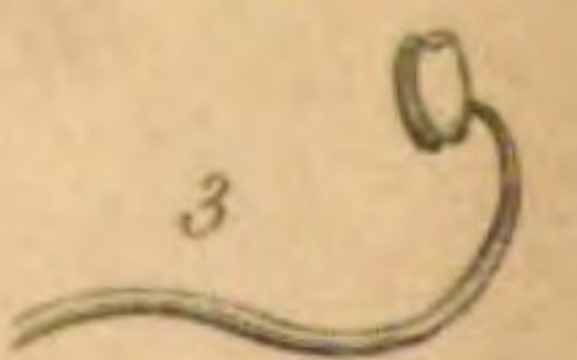
VOL. III.—PART. IV.



AMERICAN
MEDICAL BOTANY.



Rhododendron maximum



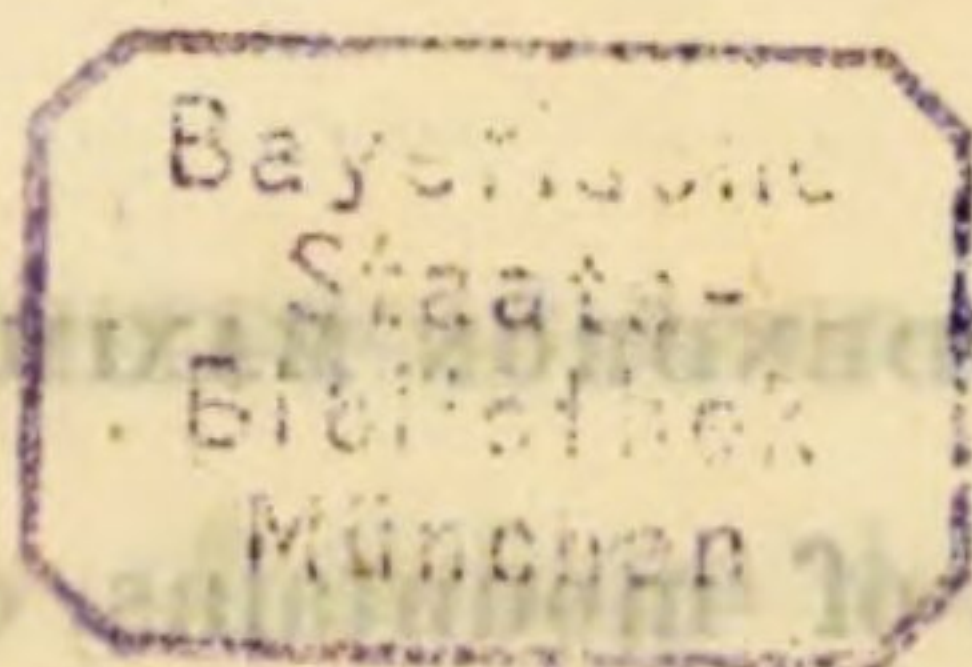
James S. Smith



Rhododendron maximum



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AMERICAN

MEDICAL BOTANY.

RHODODENDRON MAXIMUM.

American Rose bay.

PLATE LI.

THE scenery of the American forest is distinguished not less by the greatness of its natural features, the imposing and picturesque appearance of its mountains, its rocky precipices, its broad streams and lakes; than it is by the magnificent clothing of wild shrubs and trees, the uncommon beauty of which, gives to rough and inaccessible spots a richness, that cultivation can hardly imitate. The *Kalmia*, described in our first volume, and the *Rhododendron* of the present article, which are reared with care and difficulty as ornaments of European gardens and pleasure grounds, can be seen in perfection no where but in the uncultivated recesses of our own continent.

Near the summits of mountains, on the banks of torrents and deep ravines, from which rivers take their rise, where the deep shade, moist soil and dashing water, preserve the atmosphere in a state of perpetual humidity ; these shrubs, in luxuriant size and vigour, are seen to cover tracts of great extent, at one season presenting an unbroken landscape of gorgeous flowers, and at another with their evergreen foliage forming an impenetrable shelter for the wild animals of the forest.

Of the *Rhododendron maximum*, Mr. Pursh has designated three varieties. These are, 1. The Red, which inhabits swamps and the borders of mountain lakes from Canada to Carolina ; 2. The White, found in the swamps of New Jersey and Delaware ; 3. The Purple, on the highest mountains of Virginia and Carolina. This last variety is represented as peculiarly magnificent, growing to the size of a small tree, having its trunk eighteen inches and more in diameter, and its foliage triple the size of any other species.

The first variety of this elegant shrub grows abundantly on the banks of Charles river, a dozen or fifteen miles from Boston. It even supports the winter as far north as the state of Maine, and was observed, by Dr. Eaton, growing plentifully

on the borders of Sebago lake near Portland. It does not bear transplantation well, but is apt to dwindle after the first or second year. It succeeds best when removed to a damp springy soil, and to a situation calculated to afford it shelter from the sun.

The *Rhododendron*, of the Northern states, is a large straggling shrub, very irregular in its mode of growth. The bark is of a greyish colour, very much cracked and broken. The leaves are in tufts at the ends of the branches. They are evergreen, coriaceous, on round fleshy petioles, oblong-oval, entire, revolute at the edges, and pale underneath. Both leaves and petioles, when young, are covered with a light woolly substance. The flowers form a terminal cluster or thyrsus immediately above the leaves, the stalks and calyces of which are covered with a glutinous pubescence. Previous to its expansion, the whole bunch forms a large compound bud, resembling a strobilus or cone, each individual flower-bud being covered by a rhomboidal bracte, which falls off when the flower expands. Calyx small, of five unequal obtuse segments. Corolla monopetalous, funnel-shaped, with a short tube, the border divided into five large, unequal segments, which are white, shaded with lake, the upper and

largest, having a collection of orange coloured spots at its centre. Stamens declinate, unequal; the filaments white, thickened and hairy at base; anthers two celled, opening by two pores at top; pollen white. Germ ovate, hairy, glutinous; style declinate, equal to the longest stamens, thickened upwards; stigma a rough surface with five points. Capsule ovate, obtusely angular, five-celled. Seeds numerous, minute.

Considered in its chemical character, this shrub is a resinous astringent. A decoction of the leaves gives strong proofs of the presence of tannin in large quantities. Both the bark and leaves, digested in alcohol, produce a resinous tincture, which is immediately rendered turbid by water. The glutinous covering of the flower stalks appears of a resinous nature. A decoction of the leaves in water affords nothing which is not soluble in alcohol, and did not alter by it in two days' standing.

I have been induced to examine the Rhododendron and to insert it in this work, on account of the reputation it has possessed of being poisonous. The late Professor Barton, in his collections towards an American Materia Medica, has given various intimations of this sort, the most conclusive of which is his expression, "This is

certainly a poison.”—The result of my own attention to this shrub does not give reason for attaching to it suspicions of possessing a very deleterious nature. None of its external characters would lead to apprehensions of this sort, particularly the taste, which is simply astringent and herbaceous, and much like that of a common oak leaf. I know not what quantity might prove injurious, but under the conviction that the plant was not particularly dangerous, I have swallowed a green leaf of the middle size, so large that it required some resolution to masticate so unpalatable a morsel, but have found no ill effect whatever to result from it.

Medicinally considered, I think it must be ranked among the astringents, a place which both its sensible and chemical properties entitle it to hold. If it have any narcotic powers, they will probably be developed only by an extraordinary dose, which few persons will be likely to put to the test.

BOTANICAL REFERENCES.

Rhododendron maximum, WILLD. *Sp. pl.* ii. 606.—*Bot. Mag.* t. 951.—SCHMIDT, *Arb.* t. 121.—PURSH, i. 297.—MICHAUX, *N. A. Sylva*, t. 67.

MEDICAL REFERENCE.

B. S. BARTON, *Collections*, i. 18.

PLATE LI.

Fig. 1. *A branch of Rhododendron maximum in flower and in bud.*

Fig. 2. *Calyx and style.*

Fig. 3. *Stamen.*

BOTANICAL REFERENCES

Phododendron maximum, *Walters*, *Fl. Ind. Calif.*, Vol. 1, 1911, p. 101. — *Gray*, *Proc. Acad. Nat. Sci. Phila.*, 1857, p. 101.

SYNONYMICAL REFERENCES

R. S. Hartweg, *Collected*, p. 10.

PLATE II

Fig. 1. A branch of *Phododendron maximum* in flower, and in

fruit.

Fig. 2. Calyx and style.

Fig. 3. Petal.



Euphorbia Specacuanha

BOTANICAL REFERENCES

Rhododendron maximum, *Walt. & A. DC.*—*Bot. Voy.* 4:
 311—*Seemann*, *Atlas* 1: 161—*Franch.* 1: 257—*Munz*, *et al.*
Spines 1: 67.

LITERARY REFERENCES

H. S. Gentry, *Collected*, 1: 12.

PLATE II.

Fig. 1. A branch of *Rhododendron maximum* in flower and in

leaf.

Fig. 2. Calyx and style.

Fig. 3. Petal.

PL. LII.



Euphorbia Specacuanha

Described by J. Smith

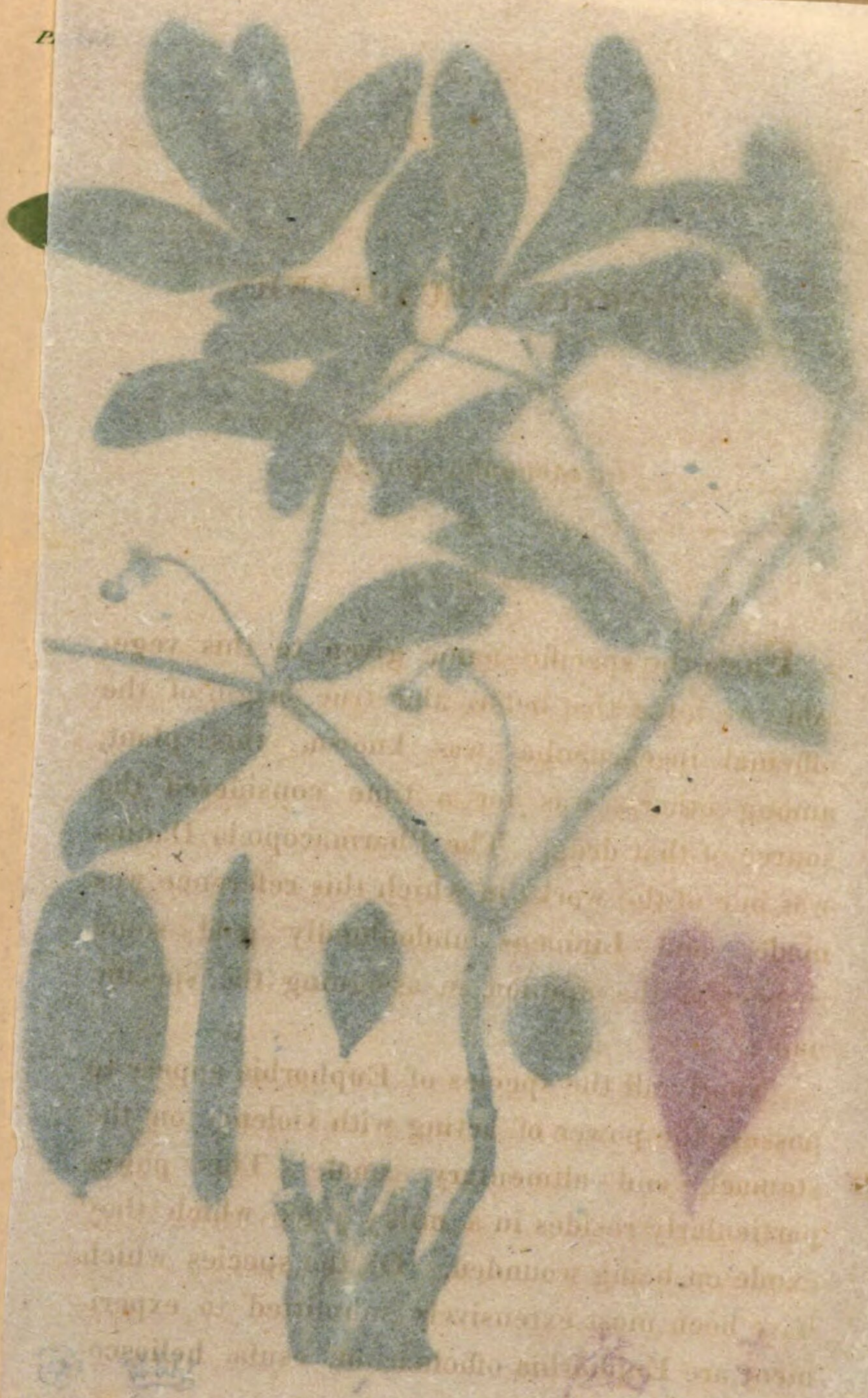
EUPHORBIA IPECACUANHA.

Ipecacuanha spurge.

PLATE LII.

From the specific name given to this vegetable we infer, that before the true origin of the officinal ipecacuanha was known, this plant, among others, was for a time considered the source of that drug. The Pharmacopœia Danica was one of the works in which this reference was made, and Linnæus undoubtedly paid some respect to the opinion in assigning the specific name.

Nearly all the species of Euphorbia appear to possess the power of acting with violence on the stomach and alimentary canal. This power particularly resides in a milky juice which they exude on being wounded. Of the species which have been most extensively submitted to experiment are *Euphorbia officinarum*, *esula*, *heliosco-*



Euphorbia Specacuartha

Small & Large

EUPHORBIA IPECACUANHA.

Ipecacuanha spurge.

=

PLATE LII.

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Nearly all the species of Euphorbia appear to possess the power of acting with violence on the stomach and alimentary canal. This power particularly resides in a milky juice which they exude on being wounded. Of the species which have been most extensively submitted to experiment are Euphorbia officinarum, esula, heliosco-

pia, dulcis, peplus, exigua, Cyparissias, palustris, and Characias. Professor Murray has collected details respecting the operation of most of these, from various medical authorities. It appears that they all excite vomiting or purging, and in large doses bring on violent burning pains of the stomach and bowels, heat and thirst, followed by great prostration of strength, cold sweats, and in some instance, death. In small quantities, however, they have been used as medicines with safety, although some of them are uncertain in regard to their dose, and difficult to manage in their operation. [Note B.]

The genus Euphorbia comprises a vast number of species, of different habit, size and mode of growth. The flowers are frequently minute, very complex, and difficult of examination. They have a *calyciform involucre* with four or five segments like petals, and the same number of interior segments like nectaries. Stamens twelve or more. Filaments articulated. Fertile flower solitary, stipitate, naked. Styles three, bifid. Capsule three seeded.—The species *Ipecacuanha* is procumbent, with opposite, obovate, oblong or linear leaves; peduncles axillary, one flowered, elongated.

The genus was placed by Linnæus in the class *Dodecandria*, order *Trigynia*. Michaux, considering as separate male flowers, the bodies of stamens which correspond, in number, to the nectaries or lacinulæ, has referred the genus to *Monœcia*, *Monadelphia*. In this he has been followed by various American botanists.—In natural arrangements this genus is among the *Tricoccæ* of Linn. and *Euphorbiæ* of Juss.

The *Euphorbia ipecacuanha* is a low, tufted plant, growing in sandy soils in the Middle and Southern states. Michaux remarks, that the plants are sometimes buried in the sand. It is a polymorphous vegetable both in its shape and colour, the leaves continually differing in their outline, even in contiguous plants; and the colour varying from green to crimson.

The root is irregular and fleshy, very large in proportion to the plant it bears, running deep into the sand, sometimes, as Mr. Pursh informs us, extending to the depth of six feet. The stems, from one root, are numerous, erect or procumbent, forming large bunches on the surface of the ground. They are smooth, regularly dichotomous, and jointed at the forks. The leaves are inserted at the joints, opposite, sessile, smooth, having most frequently an oblong shape.

though different plants possess every intermediate variety in the form of the leaf, from circular to linear. Their size and colour are likewise variable. The flowers are solitary on long peduncles from the forks of the stem. Calyx spreading, divided into five obtuse segments. Inner segments or nectaries five, small, gibbous. Stamens numerous, in five parcels, appearing, at different times, two or three together, with double anthers. The fertile flowers have a large, roundish, drooping, pedicelled germ, crowned with six revolute stigmas. Capsule three celled.

The dried root of the *Euphorbia ipecacuanha* is of a greyish colour outside, and white within. It is light and brittle and has about the hardness of cork. To the taste it is sweetish and not particularly unpleasant.

I subjected some portions of the root to chemical examination and obtained the following results.—Sulphuric ether digested on the powdered root dissolves a part of it; and this ethereal solution gives a precipitate, if alcohol is added to it.—Alcohol alone takes up another portion of the root, and assumes a pearly turbidness after water is added. Both the ethereal and alcoholic solutions, evaporated to dryness, leave a residuum which is fusible and inflammable. The decoction

gives no precipitate with gelatin or sulphate of iron. With alcohol it gave out a white precipitate which rendered the solution turbid, and subsided in flocks. The cold infusion exhibited the same phenomena in a smaller degree. From these appearances we may infer that the root contains caoutchouc, resin, mucus and probably fæcula.

The *Euphorbia ipecacuanha* has long been known to possess the same property, which is so frequent in its genus, of exciting the stomach powerfully as an emetic. The appropriation of its specific name seems even to imply that such a property had been recognised in this species in a more eminent degree, than in the rest. It does not appear, however, that it has ever continued long in use, this being prevented, probably, by the suspicious character of the race of plants to which it belongs. The late Dr. Barton mentions this vegetable among his indigenous emetics, but considers it too violent and uncertain to be depended on as a safe medicine.

Within a few years the plant has been attended to by some medical gentlemen in Philadelphia, who report more favourably of its powers and mode of operation; and consider it as a safe, certain and manageable emetic, applica-

ble to most of the cases in which medicines of this kind are called for.

Being desirous to obtain personal knowledge of the medicinal character of this vegetable, I instituted trials with different parcels of the dried root, some of which were gathered by myself, in flower, near Philadelphia, and the rest sent me by friends from Baltimore and Washington. Portions of these roots were given to a variety of patients in the Dispensary and Almshouse by myself and by other physicians, who have obliged me by communicating the results of their observations. These experiments have led to the conclusion that the *Euphorbia ipecacuanha* in doses of from ten to twenty grains is both an emetic and cathartic ; that it is more active than *ipecacuanha* in proportion to the number of grains administered ; that in small doses it operates with as much ease as most emetics, in a majority of instances. If it fails, however, at first, it is not so safely repeated as the other emetics in common use. Given in large doses it excites active and long continued vomiting, attended with a sense of heat, vertigo, indistinct vision, and prostration of strength. I have not ventured upon any large dose myself, but have been informed, that such is the effect, by those who have given the root in

doses of two scruples and upwards. The plant appears to differ from the South American Ipecacuanha in having the degree of its operation proportionate to the quantity taken; the process of vomiting not being checked by the powder being thrown off of the stomach, as frequently happens, when common Ipecac is given in large doses.

At my request, Dr. James McKeen made this plant and another species, *E. corollata*, the subjects of an inaugural dissertation at Harvard University, in 1820. As his observations have been made with some care, and illustrate very fairly the action of the medicine, I insert the principal cases from his manuscript.

“*Case I.* The first experiment,” he observes, “made with this species of the Euphorbia was upon a man of intemperate habits, about twenty seven years of age, and who appeared to be a candidate for Delirium Tremens. I gave him ten grains. He told me that it always required powerful doses of medicine to produce any effects upon his stomach or bowels, but as I was then a stranger to the powers of the Euphorbia ipecacuanha, it was thought prudent not to hazard a large quantity until something had been ascertained of its strength. When I called in the

morning after it was taken, I learned that the medicine had produced a gentle purging, preceded by a considerable degree of nausea, but that there had been no vomiting.

“*Case II.* The next fair opportunity which occurred for experiment was in the case of a female about thirty seven years of age. This woman, for a considerable portion of her life, had suffered from syphilis ; nothing remained now, however, specifically of this kind, excepting the marked effects of a constitution shattered by disease. I gave her at first ten grains of the *Euphorbia ipecacuanha*, and in twenty minutes, no signs of vomiting occurring, I gave her eight grains more, and kept adding to the quantity, which she had taken, until it amounted in the whole to forty grains. I remained by this patient until vomiting commenced, which was precisely thirty five minutes after the exhibition of the first ten grains. As the influence of the mind, in contemplating the effects of an emetic, will often induce its more speedy operation, I diverted the patient's attention as much as possible, that no consequences might ensue, but such as were produced by the specific action of the medicine. As soon as I ascertained that this *Euphorbia ipecacuanha* was likely to produce effectual

vomiting, I left the house. About thirty hours afterwards I called to see this patient, and with much surprise found that the quantity I had given her had continued to operate by emesis and catharsis ever since. She was, however, very little exhausted, and there was nothing of cramp either on the stomach or extremities which so often distress those who are too severely vomited. About this time there was a cessation of vomiting without the assistance of remedies. Two days afterwards this woman told me she had not been as well as she then was for a number of years. The powerful vomiting produced a considerable degree of dizziness, but this went off in the course of twenty four hours. I had quite despaired of vomiting this patient with the *Euphorbia ipecacuanha*. In no instance afterwards was this medicine more than half as long in producing vomiting as it was in this case.

Case III. A girl of about eighteen years of age, whose manner of living was similar to that of the person mentioned in the preceding case, applied to me for an emetic; I gave her thirty grains of the *Euphorbia ipecacuanha*, and told her to take half of this quantity, and if it did not operate in half an hour, she might take the remainder. Contrary to my injunctions she took

the whole at a single draught. In fifteen minutes her attendants told me she began to vomit, and continued to throw up, at intervals, smartly for five hours, and was purged seven or eight hours more. For some time after this she complained much of dizziness.

Case IV. As I had found, in the first trial, that ten grains of the *Euphorbia ipecacuanha* failed to produce vomiting, I tried the same dose upon another subject, which was a woman of about forty eight years of age, to determine if so small a quantity would produce vomiting. In about fifteen or twenty minutes after the medicine was received into the stomach, it began to operate. After she had vomited three times, it commenced purging, and produced three or four evacuations. This woman did not complain of any dizziness, as those did in the two preceding cases.

Case V. A woman about thirty one years of age took fifteen grains of the *Euphorbia ipecacuanha*; in seventeen minutes it began to operate, and vomited the patient every few minutes, until the operation amounted to five or six times, and afterwards a moderate purging ensued. The operation, in this case, was more satisfactory than any preceding ones, as it effectually evacuated

the stomach and bowels, without a too long continuance of the vomiting.

Case VI. A man of forty years of age was seized with symptoms of fever. Four grains of sulphate of copper and twelve of common ipecac were given. This dose produced no emetic operation, but occasioned violent purging. Forty eight hours after, I gave him twenty grains of *Euphorbia ipecacuanha*, in powder, which produced very effectual evacuations from the stomach, vomiting him eight or nine times; after which he had one or two alvine discharges.

Case VII. In one instance, for experiment, I gave four grains of this plant; but it neither affected the stomach nor bowels, nor the feelings of the patient, nor his pulse."

From what is now known respecting the *Euphorbia ipecacuanha*, we are justified in considering it an active emetic, and, if prudently administered, more safe than a majority of the species of its genus. It wants, however, the peculiar mildness of the officinal *Ipecacuanha*, which, in cases of slow operation, permits the dose to be accumulated by repetition, until its due effect takes place, without danger of excessive violence in the length and degree of evacuation, and without an injurious impression on the

nervous system. This, indeed, appears to be the common defect of the active North American emetics hitherto examined. And until a more extensive examination has brought to light new substances of this class, or better defined the modes of preparation and use of those already known, we cannot wish that the South American drug should be diminished in our markets, or less familiar to our physicians.

BOTANICAL REFERENCES.

Euphorbia Ipecacuanha, LINN. *Sp. pl.*—WILLD. ii. 900.—MICHAUX, *Flora*. ii. 212.—PURSH, ii. 606.—*Botanical Magazine*, t. 1494.—*Euphorbia inermis*, &c.—GRONOVIVS, *Virg.* 74.—*Tithymalus flore minimo herbaceo*?—CLAYTON, *Phil. trans. abr.* viii. 331.

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PLATE LII.

Fig. 1. *Euphorbia Ipecacuanha*.

Fig. 2, 3, 4, 5. Different forms and sizes of the leaf observed in individuals of this species.

Fig. 6. Red variety of the leaves.

Fig. 7. Calyx.

Fig. 8. Calyx opened, with five of the stamens expanded.

Fig. 9. A perfect flower.

Fig. 10. Styles and stigmas magnified.

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BOTANICAL REFERENCES

Euphorbia speciosa Lam. Sp. Pl. (Wier) 100—M. C. C. R. II. 219—Horn, II. 100—Botanical Magazine, 1894—*Euphorbia speciosa*, DC.—Monocot. 179, 18—*Euphorbia speciosa*—Lamour., Bull. Trans. 1894, vol. 331.

MEDICAL REFERENCES

See also: *Med. Mag.*—B. B. Barton, Coll. 20—W. P. C. Barton, *Fig. Med. Mag.* vol. 1.

PLATE III

- Fig. 1. *Euphorbia speciosa*.
- Fig. 2, 3, 4, 5. Different forms and sizes of the leaf observed in individuals of this species.
- Fig. 6. Red variety of the leaves.
- Fig. 7. Calyx.
- Fig. 8. Calyx opened, with five of the stamens expanded.
- Fig. 9. A perfect flower.
- Fig. 10. Styles and stigmas magnified.

PL. LIII.



Euphorbia corollata

Amia & Smith

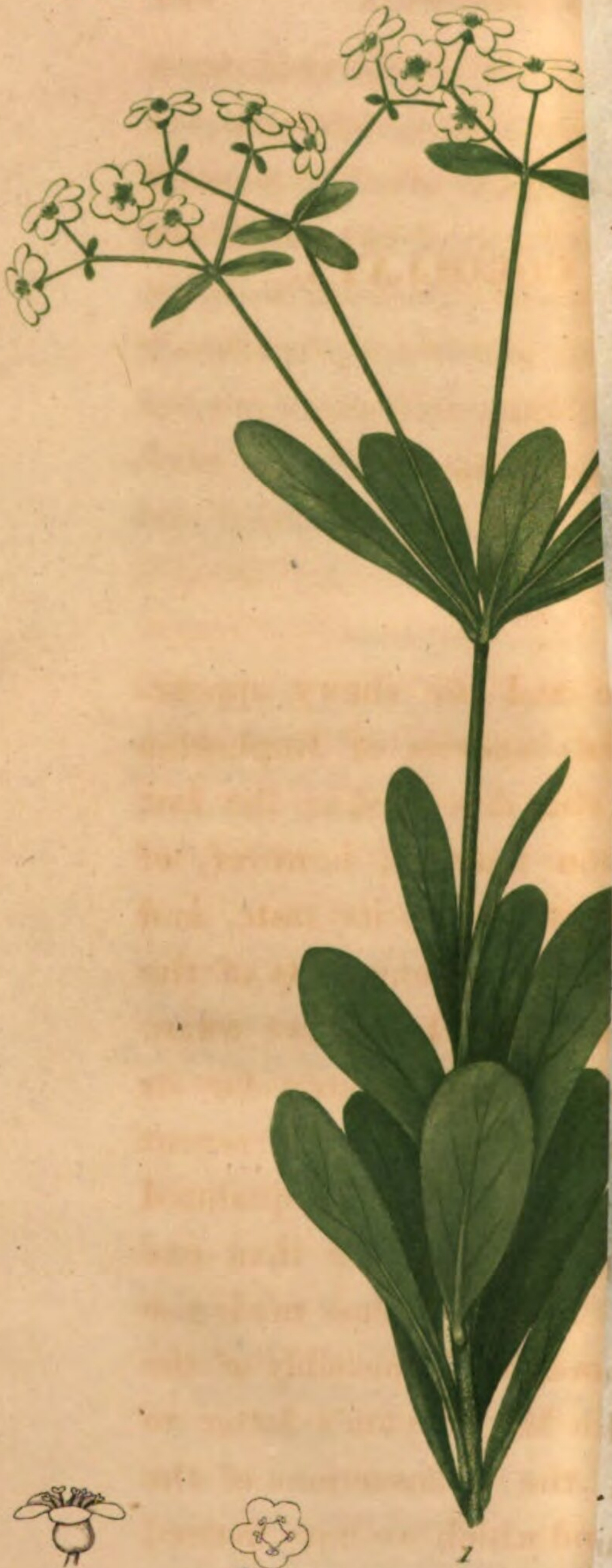
COROLLATA.

ering spurge.

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PL. LIII.

The plant of course and the shewy appear-
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with the medicinal properties of more than one
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present species. In Mr. Clayton's letter to
the Transactions of the
Royal Society, and which we have noticed



Euphorbia corollata

EUPHORBIA COROLLATA.

Large flowering spurge.

PLATE LIII.

IN point of stature and the shewy appearance of its flowers, this species of Euphorbia differs eminently from that described in the last article. In the common features, however, of the genus, such as its lactescence, its taste, and its medicinal powers; the consanguinity of the two plants evidently appears. I am not aware that this species has been much known for its operative qualities, until within a very recent period. The indians were, indeed, acquainted with the medicinal properties of more than one species of Euphorbia. They doubtless made use of the *E. ipecacuanha*, and not impossibly of the present species also. In Mr. Clayton's letter to Dr. Grew, contained in the Transactions of the Royal society for 1780, and which we have noticed

in speaking of *Aletris farinosa*, the writer states, that the Aborigines made use of "the roots of Tythymal, of which there are two sorts, the one *flore minimo herbaceo*, the other *flore albo*. The flower of this last," he says, "is small, but large in comparison with the other. They are *repentes*, and grow in old manured grounds. They chiefly make use of the latter of these, and it is a most excellent purge, though it sometimes vomits. It is quick but moderate in its effect, and has this peculiarity, that it opens the body, when other more violent purgatives will not move it." We might safely conclude that the white flowering species, here noticed, is the *Euphorbia corollata*, were it not for the term *repentes* applied to both plants. It is not improbable that in this respect, the writer might have been misinformed.

Pursh informs us that *Euphorbia corollata* grows in dry fields from Canada to Carolina. I have never met with it north of Pennsylvania. The drawing which illustrates our description is from a specimen cultivated in the Botanic garden at Cambridge. It is a tall, erect plant, from one to five feet in height, resembling, at a distance, some of the white flowering *corymbiferae*. It begins to flower in June, but is not fully expanded until July or August. Its specific

character is as follows. *Umbel five rayed, three parted, dichotomous; leaves and involucra oblong, obtuse; segments of the calyx obovate, petaloid, coloured.* The shape of the leaves is subject to variety, as is also their smoothness or hairiness.

This plant has a large branching root which sends up a number of stems, frequently from two to five feet in height. They are erect, round and in most instances simple. The leaves are scattered, sessile; oblong, obovate or linear, a little revolute at the margin, smooth in some plants, very hairy in others. The stem divides at top into a large five rayed umbel, supported by an involucre of as many leaves. Not unfrequently a small axillary branch or two arise from the sides of the stem below the umbel. The rays of the umbel are repeatedly trifid or dichotomous, each fork being attended by two leaflets and a flower. The top of the stem or centre of the umbel is turgid, and often bears a precocious flower. The calyx is large, rotate, white, with five obtuse petal-like segments, from which the name of the species has been taken. The nectaries or inner segments are five, very small, obtuse projections situated at the base of the segments. Stamens a dozen or more emerging two or three at a time, with double anthers.

Germ pedicelled. Capsule three celled. A great portion of the plants are wholly stamiferous.

The results of a short chemical examination of this plant were very similar to those afforded by *E. ipecacuanha*. The ethereal solution was made turbid by alcohol, and the alcoholic by water. The precipitate in the last instance seemed denser and more abundant than it was in the former species. The decoction deposited a mucus or feculent substance, by means of alcohol, as in the other plant. The same sweetish taste characterised the solutions of both vegetables.

It has been observed, by late experimenters in vegetable chemistry, that most of the lactescent or milky plants contain caoutchouc. That they contain a substance of this nature, which is dissolved by ether and not by alcohol, I am able to attest from the examination of various lactescent plants inserted in this work, and some others.

The properties of *Euphorbia corollata* have been lately brought into notice by W. Zollicoffer, M. D. of Baltimore, to whom I was first indebted for my specimens of the root and living plant; and who has furnished me with a variety

of facts relating to its properties. Dr. Z. states that this plant is quite common in some parts of the state of Virginia. In some districts of Maryland, and more particularly in Anne Arundel county, it grows in the greatest abundance, where it is recognised by the common appellations of Milkweed, Snake's milk, Ipecacuanha and Indian Physic. It delights in a poor, dry, and sandy soil. It is seldom or never found growing in the woods, but in fields that are cultivated every two or three years. The farmers have frequently told him that it is very hurtful to small grain, when it grows in great quantities, and the common means that are made use of, such as ploughing and harrowing, in order to kill *bluegrass*, have the effect of increasing the quantity and rapid growth of this plant. It is never eaten by animals. The root is sometimes used as an emetic by the country people; and it is esteemed in the cure of dropsy. The stalks, which arise from the common trunk of the root, are sometimes as many as thirty, and from this down to a single one. The largest roots, which he recollects seeing, measured from an inch to two inches and a half in circumference. He has been in the habit of using the *Euphorbia corollata*, for some time past in practice, as an emetic,

in the place of the Ipecacuanha of the shops ; and thinks it in no respect inferior to this article. Combined with opium and the Sulph. potassæ in the proportions of the Pulv. doveri, he has found it to be a valuable diaphoretic. The contused root, in its recent state, will excite inflammation and vesication, when applied to any part of the body ; which generally goes off in the course of four or five days without being attended with any inconvenience whatever. He was led to give it a number of trials in this way from the circumstance of his face becoming considerably inflamed after having handled large quantities of the root. As an expectorant, this plant, he says, is deserving of the attention of practitioners.

Dr. Z. has furnished me with minutes of seventeen cases, in which he administered the powdered root of this plant in doses of from ten to twenty grains. In all of these it operated by vomiting, with the exception of two cases, where it produced nausea, followed by catharsis. Having tried a variety of preparations, he states, that the extract may be given in doses of from five to eight grains ; the wine prepared in the same way as Vinum ipecacuanhæ, in dose of an ounce or an ounce and an half. Of the root in powder from fifteen to twenty grains was found a proper

emetic. He considers this medicine as having a peculiar advantage in possessing no unpleasant taste ; being only followed by a sense of heat in a few minutes after it is taken. But this is by no means lasting, nor does it produce any material uneasiness.

In some experiments, to determine the soluble portions of this root, Dr. Z. found that two thousand one hundred and sixty grains of the recent root afforded one hundred and two grains of watery extract ; and a like quantity by digestion in alcohol gave one hundred and twenty three grains of alcoholic extract. He did not observe any difference in the activity of these two extracts.

Dr. McKeen, whose Dissertation on the species of *Euphorbia* has been already cited in the last article, has detailed the circumstances of twelve cases, in which he administered the *Euphorbia corollata*. His experiments differ from those of Dr. Zollickoffer, in the quantity of the root used, being always smaller. The doses, which he gave, were from three to twelve grains of the powder. In every instance the medicine operated as a cathartic. In most of the cases nausea was produced, but in three only, out of the whole number, it was followed by vomiting.

In one case a dose of three grains proved actively cathartic in four hours. In another five grains produced vomiting. In a third no effect was experienced from twelve grains, except that of a moderate laxative. In one instance twenty grains were given, which produced vomiting three times, followed by about twenty alvine evacuations.

I have placed portions of this plant in the hands of several practitioners and medical students, with a request to be informed of the effect, when suitable opportunities for its exhibition had occurred. In a majority of the instances I have been told, that a cathartic operation had followed its use ; and sometimes, though less frequently, an emetic. It rarely has proved inactive.

The *Euphorbia corollata* must undoubtedly be ranked among the more efficient medicines of the evacuating class. Dr. McKeen concludes, from his experiments, that it is a very certain purgative, possessing, he thinks, about double the strength of jalap. It exerts its cathartic efficacy in doses of less than ten grains. If given to the amount of fifteen or twenty grains, it is very sure to prove emetic ; the proportion of its failures, being not greater than occurs in the use of other emetic medicines. The only inconveniences which have come to my knowledge, as

attending it, are, that if given in small doses, for a purgative, it is apt to produce nausea; while in the large doses suitable for an emetic, it sometimes has induced a degree of hypercatharsis. But it must be observed, that many of the medicines, in common use, may occasion similar consequences in persons of peculiar habit and irritable fibre. Future experiment will, no doubt, determine whether the *Euphorbia corollata* is any more irregular and unmanageable than other medicines of its kind, or whether it is entitled to a permanent and useful place in the *Materia Medica*.

Many, and perhaps all the species of *Euphorbia* are powerful external stimulants. Several are used as a sort of caustic to destroy warts. The gum, called *Euphorbium*, produced by the *Euphorbia officinarum*, is a strong vesicatory, employed by farriers, and sometimes used to adulterate the plaister of *Cantharides*. The blistering power of *E. corollata* has been stated by Dr. Zollickoffer. This active genus of plants deserves a thorough investigation with a view to this particular property, to determine whether they are safe and manageable vesications, or virulent and uncertain.

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Euphorbia corollata, LINN.—WILLD. ii. 916.—MICHAX, ii. 210.
—PURSH, ii. 607.—Tithymalus marianus, &c.—PLUKENET, *Mant.*
182. t. 446. f. 2.

MEDICAL REFERENCES.

CLAYTON, *Philosophical transactions abridged*, viii. 331.—ZOLLICKOFFER, *Materia Medica*. Baltimore, 1819.

PLATE LIII.

Fig. 1. *Euphorbia corollata*, the top of a plant rather below the common size.

Fig. 2. Barren flower.

Fig. 3. Calyx not fully expanded.

Fig. 4. Stamen.

Fig. 5. Fertile flower.

BOTANICAL REFERENCES

Euphorbia corollata, Linn.—*Flora* 4: 916—*Systema* 2: 810.
—Pursh, *Fl. Bor.*—*Thymus* 2: 222—*Flora* 4: 916—*Systema* 2: 810.
1845, 4: 446, 1: 2.

MEDICAL REFERENCES

Clayton, *Philosophical Transactions* 1713, vol. 251—*Ann.*
Lancaster, *Medical Botany*, Baltimore, 1812.

PLATE III

- Fig. 1. *Euphorbia corollata*, the top of a plant rather below the
common size.
Fig. 2. Mature flower.
Fig. 3. Calyx not fully expanded.
Fig. 4. Stamen.
Fig. 5. Pistil flower.



Polygala rubella

Annin & Smith.

POLYGALA RUBELLA.

Bitter Polygala.

—
PLATE LIV.

THIS plant is interesting from the curious manner in which a part of the fruit is produced, by a kind of imperfect flower growing close to, and in some instances under, the surface of the ground. It is not the only species of the *Polygala* which has this peculiarity. I have often observed little shoots at the root of *P. paucifolia*, one of the most beautiful of the genus, bearing apterous flowers and subterranean fruit, precisely like those represented in our plate. The *P. polygama*, of Walter and Pursh, if, indeed, it is a distinct species, has the same remarkable mode of growth. It is difficult to imagine what end is attained by nature in this singular arrangement, by which a part of the seeds are ripened in the sun, while the rest, like the fruit of *Arachis hypogaea*, is

Polygala rubella
This plant is interesting from the cotton
manner in which a part of the fruit is produced
by a kind of imperfect flower growing close to
and in some instances under the surface of the
ground. It is not the only species of the *Polygala*
which has this peculiarity. I have often observed
little shoots at the foot of *P. granitosa* one of the
most beautiful of the genus bearing numerous
flowers and subtending them precisely like
those observed in *anagallis*. The *P. polygama*
of *Michx.* and *Walt.* is a striking
example of the same remarkable mode of growth.
It is difficult to imagine what end is attained by
anum in this singular arrangement, by which a
part of the seeds are sown in the soil while
the rest are in the air. *Arabis hypnoides* is

Polypogon rubella

Ames & Smith

POLYGALA RUBELLA.

Bitter Polygala.

PLATE LIV.

THIS plant is interesting from the curious manner in which a part of the fruit is produced, by a kind of imperfect flower growing close to, and in some instances under, the surface of the ground. It is not the only species of the Polygala which has this peculiarity. I have often observed little shoots at the root of *P. paucifolia*, one of the most beautiful of the genus, bearing apterous flowers and subterranean fruit, precisely like those represented in our plate. The *P. polygama*, of Walter and Pursh, if, indeed, it is a distinct species, has the same remarkable mode of growth. It is difficult to imagine what end is attained by nature in this singular arrangement, by which a part of the seeds are ripened in the sun, while the rest, like the fruit of *Arachis hypogæa*, is

buried from the light. To the eye there is no difference between seeds taken from the upper or lower racemes of the plant. It would be worth while to ascertain if the two will vegetate equally well.

The genus is marked by a *calyx of five leaves, two of which are wing-like and coloured. Capsule obcordate, two celled and two valved. The species rubella* has its *stems simple; leaves linear-oblong, mucronated; flowers racemed, those of the stem winged, those of the root apterous.*

Class *Diadelphia*, order *Octandria*; natural orders *Lomentaceæ*, Linn. *Pediculares*, Juss.

The *Polygala rubella*, here described, is the plant designated by that name in Muhlenberg's catalogue, as I have formerly learnt from the author himself. There is little doubt that Willdenow's plant is the same, described from an imperfect specimen. It is found in dry, sandy, or gravelly soils in many parts of the United States, and flowers in June and July.

Root somewhat fusiform, perennial, branching. Stems numerous, ascending, smooth, angular, simple. Leaves scattered, smooth, the lower ones obovate, smaller; the upper ones linear-lanceolate, obtuse, mucronated, sessile. Flowers purple, short-crested, in terminal racemes.

Bractes small, ovate-lanceolate, caducous. Wings of the calyx rhomboid-oval, obtuse, with a slight middle nerve. Corolla small, closed, of three segments, the middle one largest and crested by the division of its sides and extremity. Anthers eight, forming a double row, the filaments coalescing. Germ compressed, inversely heart-shaped; style deflexed; stigma bearded inside, with a prominence below it. Capsule inversely heart-shaped, nearly smooth, margined, and invested with the wings of the calyx. Seeds two, obovate, hairy, with a transparent appendage or strophiole on the inside. From the base of the stems proceed a number of prostrate shoots situated upon, and sometimes nearly under the ground, bearing a row of incomplete fertile flowers. These flowers are furnished with a calyx without wings, a minute corolla and stamens, and a short style. The germ and fruit precisely resemble those of the more perfect flowers.

Like some of the European species which it resembles in habit, this plant is a strong and permanent bitter, imparting its sensible properties both to spirit and to water. I digested a portion of the dried plant in ether, and added alcohol to the solution. No change was visible at the time of mixture, but on standing till the

ether had partly evaporated, the alcohol became turbid. A tincture of the plant was not immediately affected by adding water, but on standing over night it became very turbid, and in a few days deposited a large precipitate. The bitterness, which is probably of the extractive kind, was communicated to cold, as well as hot water; and to alcohol. The aqueous solutions appear strong enough to represent the virtues of this vegetable.

The *Polygala rubella*, from its extreme bitterness, has attracted the notice of various medical practitioners in the Northern states. I have been assured by those who have tried its efficacy, that the infusion administered in small doses, proves a useful tonic and stimulant to the digestive organs. In large doses it opens the body and excites diaphoresis. Its powers appear to resemble those of *Polygala vulgaris* and *P. amara* of Europe, to which it has a close botanical resemblance; and which have enjoyed a certain degree of medicinal reputation as tonics and expectorants.

BOTANICAL REFERENCES.

Polygala rubella, MUHLENBERG, *Catal.*—WILLD. iii. 875.—
PURSH, ii. 464.—*Polygala polygama*?—NUTTALL, *genera*, ii. 87.

PLATE LIV.

Fig. 1. *Polygala rubella*.

Fig. 2. *A flower*.

Fig. 3. *Calyx*.

Fig. 4. *Corolla magnified*.

Fig. 5. *Fruit of ditto*.

Fig. 6. *Body of stamens*.

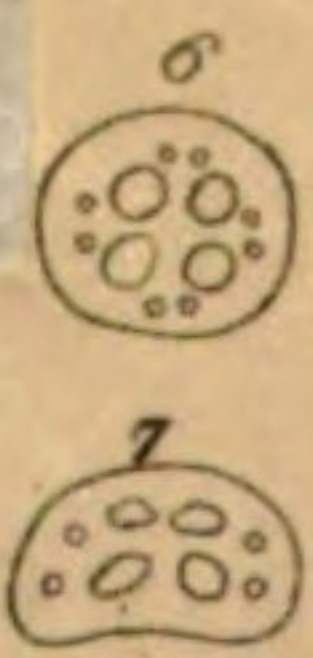
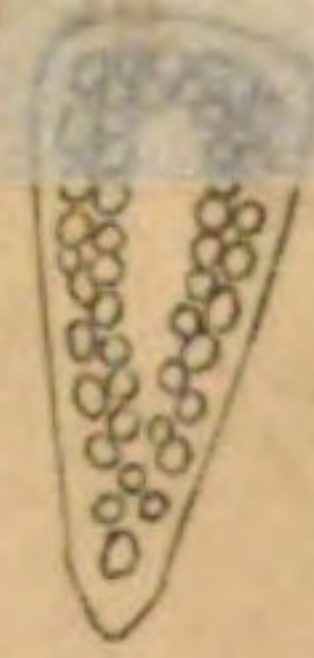
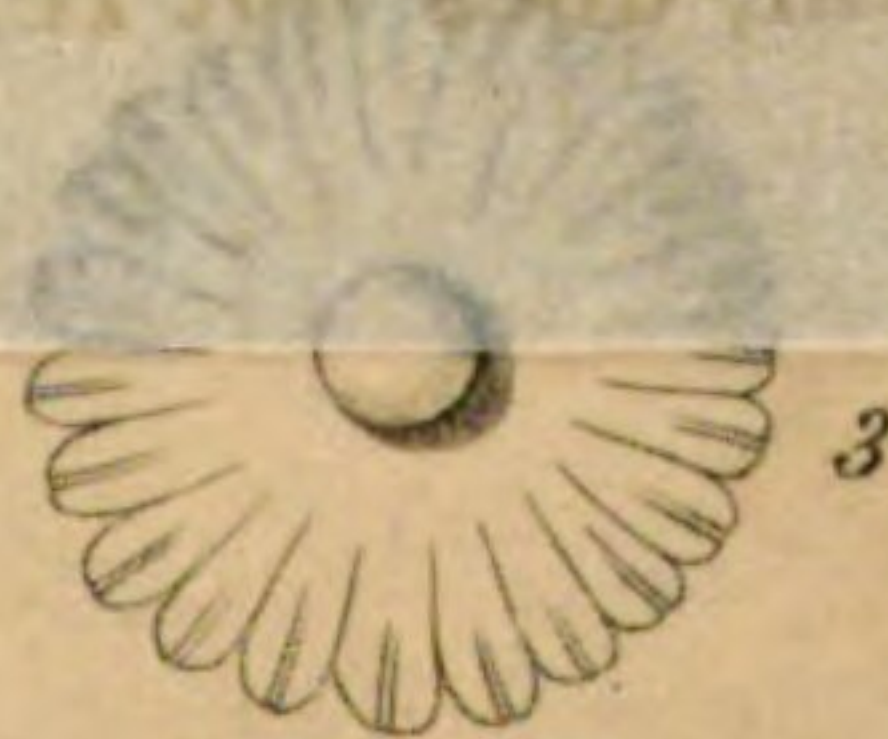
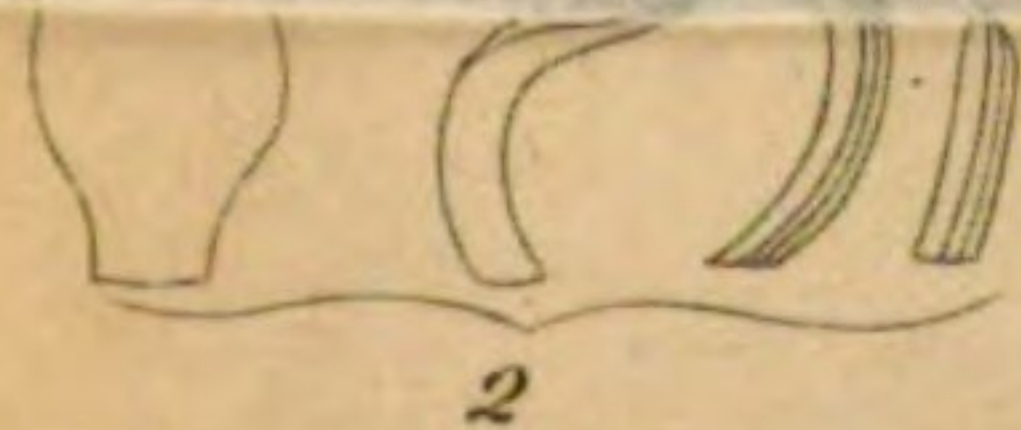
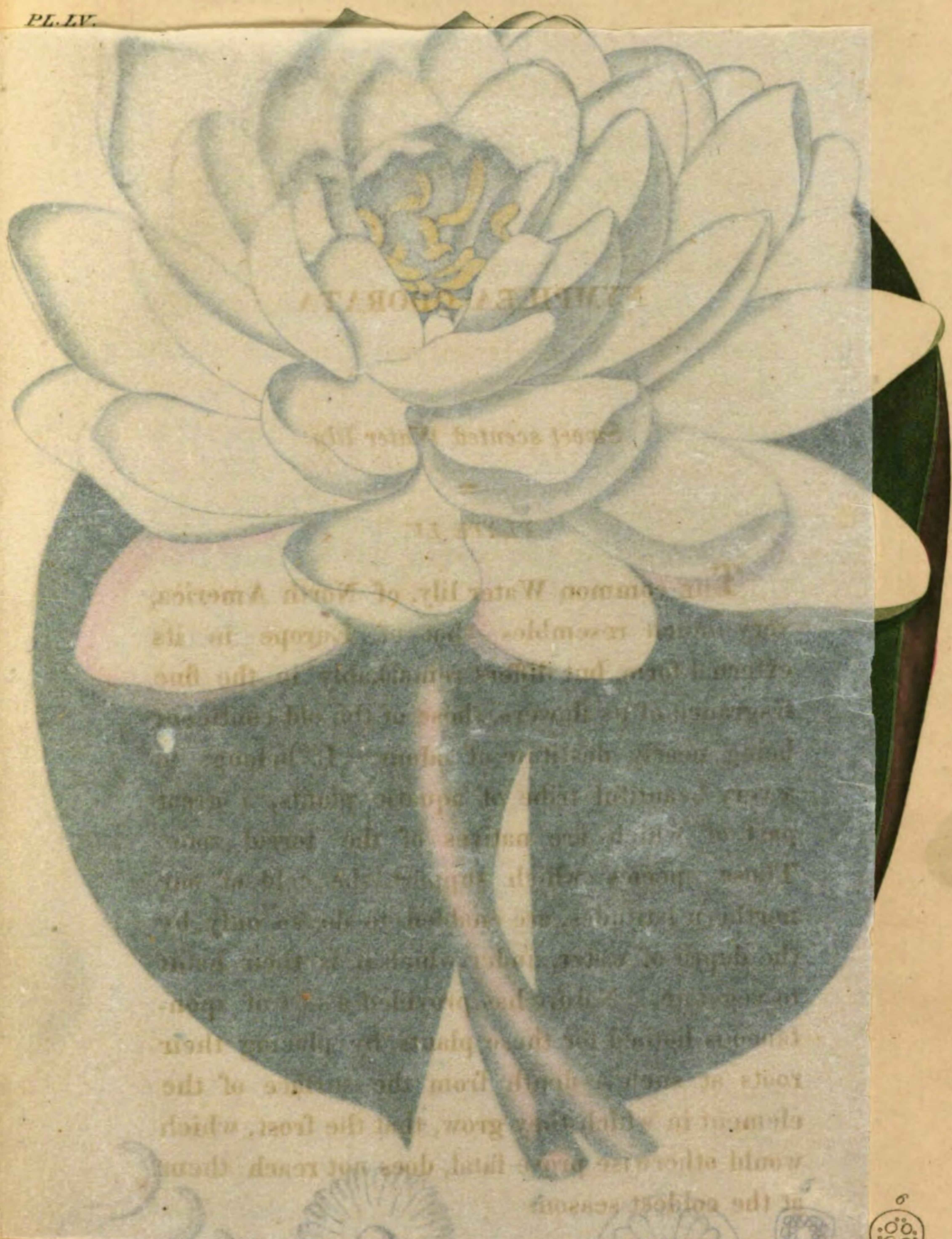
Fig. 7. *Pistil*.

NYMPHÆA ODORATA.

Sweet scented Water lily.

PLATE LV.

THE common Water lily, of North America, very much resembles that of Europe in its external form, but differs remarkably in the fine fragrance of its flowers, those of the old continent being nearly destitute of odour. It belongs to a very beautiful tribe of aquatic plants, a great part of which are natives of the torrid zone. Those species which support the cold of our northern latitudes, are enabled to do so only by the depth of water, under which it is their habit to vegetate. Nature has provided a sort of spontaneous hotbed for these plants, by placing their roots at such a depth from the surface of the element in which they grow, that the frost, which would otherwise prove fatal, does not reach them at the coldest season.



Nymphaea odorata

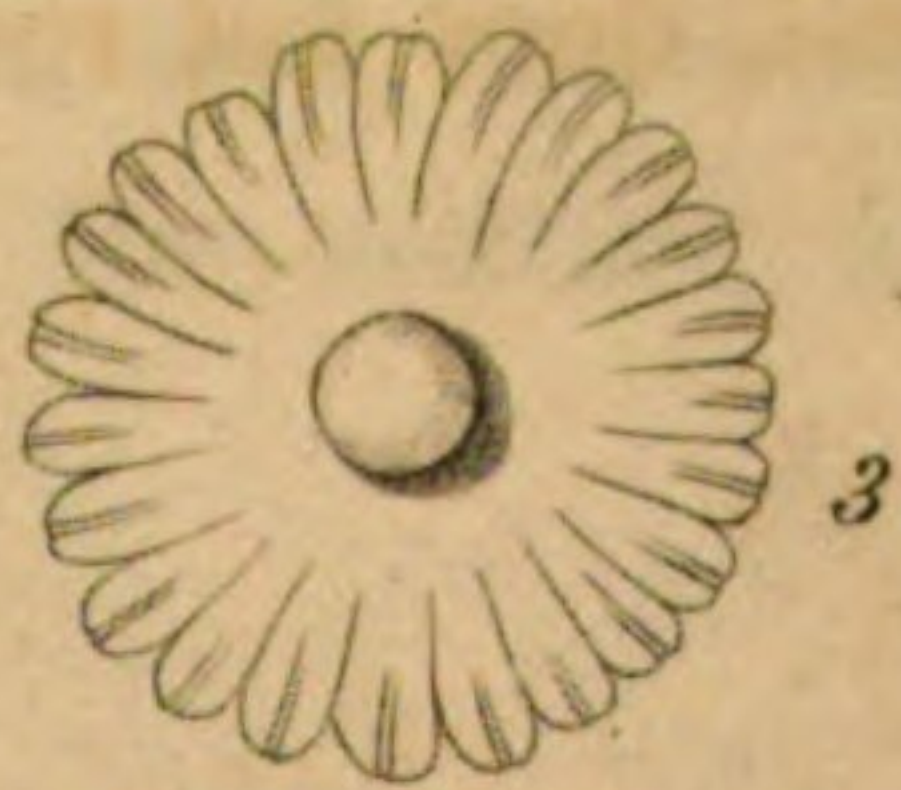
Annan & Smith

SYMPLEA ODORATA.

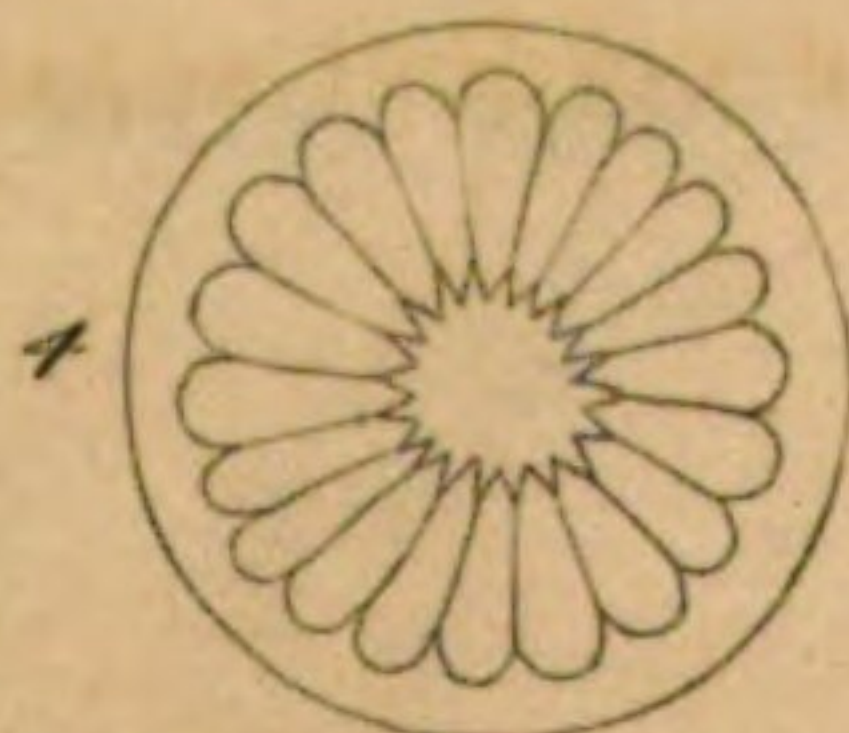
Sweet scented Water lily.

PLATE LV.

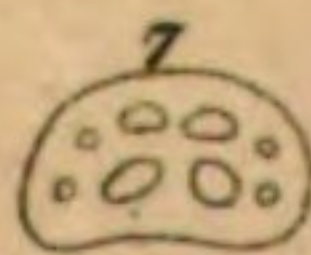
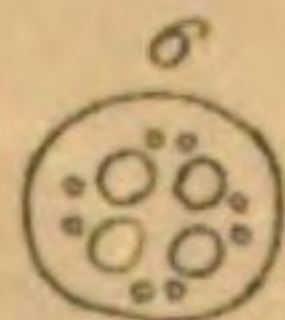
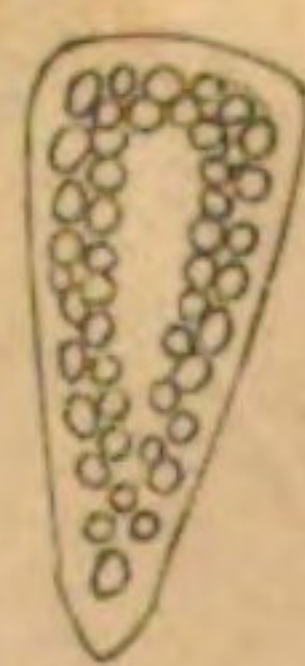
THE common Water lily, of North America, very much resembles that of Europe in its external form, but differs remarkably in the fragrance of its flowers, those of the old continent being nearly destitute of odour. It belongs to a very beautiful tribe of aquatic plants, a great part of which are natives of the torrid zone. Those species which support the cold of our northern latitudes, are enabled to do so only by the depth of water, under which it is their habit to vegetate. Nature has provided a sort of spontaneous hotbed for these plants, by placing their roots at such a depth from the surface of the element in which they grow, that the frost, which would otherwise prove fatal, does not reach them at the coldest season.



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Nymphaea odorata

Annan & Smith

The *Nymphaea odorata*, the finest of the northern species, grows abundantly in most parts of the United States about the edges of rivers and ponds where the water is more than a foot in depth. It is one of the largest of our native flowers, and though it has often been represented as inferior in size to the water lily of Europe, I am sure that this comparison can only have resulted from the inspection of cultivated specimens. The unexpanded drawing was made from a full grown and fully expanded specimen, and is actually smaller than the flower from which it was taken.

River anther is familiar with the leaves and stems of this plant, which with a few similar aquatic forms floating beds about the edges of deep fresh waters, affording to the fish a favorite shelter from the light; and often rendering them more essential service, by entangling the hooks and lines of their pursuers.

The roots of this plant creep through the muddy bottoms of ponds to a great extent. They are very rough, knotted, blackish, and as large as a man's arm. The porous stalks, which proceed from these, are bowed up by the quantity of air they contain, and continue to be elongated till they reach the surface of the water, which is

The *Nymphæa odorata*, the finest of the northern species, grows abundantly in most parts of the United States, about the edges of rivers and ponds, where the water is more than a foot in depth. It is one of the largest of our native flowers, and though it has often been represented as inferior, in size, to the water lily of Europe, I am sure that this comparison can only have resulted from the inspection of cultivated specimens. The annexed drawing was made from a full grown and fully expanded specimen, and is actually smaller than the flower from which it was taken.

Every angler is familiar with the leaves and stems of this plant, which, with a few similar aquatics, forms floating beds about the edges of deep fresh waters, affording to the fish a favourite shelter from the light; and often rendering them more essential service, by entangling the hooks and lines of their pursuers.

The roots of this plant creep through the muddy bottoms of ponds to a great extent. They are very rough, knotted, blackish, and as large as a man's arm. The porous stalks, which proceed from these, are bouyed up by the quantity of air they contain, and continue to be elongated till they reach the surface of the water, which is

often at the height of several feet. The upper side of the leaves has a highly repellent power for water, owing to its finely polished surface, from which the fluid rolls off as from a coating of oil. When the buds have attained to maturity, they emerge and expand their flowers. This takes place in the morning; and when the sun is bright, a bed of these flowers presents a truly magnificent spectacle. Owing to the concavity of the calyx and petals they continue to float during a great part of the day. They are seldom elevated from the surface, except when the stem is uncommonly large, or pushed upward by some displacement of the adjacent leaves. At night, or before, the flowers close, and either rest on the surface or sink beneath it till the subsequent day. When flowering is over, the germ sinks to the bottom and there ripens its fruit.

The genus *Nymphæa* is now separated from some other plants formerly attached to it by the following character. *Calyx four or five leaved; petals many, inserted into the germ below the stamens; stigma radiated, sessile with a tubercle in the middle; berry many celled, many seeded.* This species very nearly resembles the *N. Alba* of Europe, but appears distinct by the following marks. *Leaves orbicular-cordate, entire, the lobes*

acuminate, and veins prominent beneath; calyx four-leaved, equal to the petals.—Linnæus placed this genus in his *Miscellanæ*, and Jussieu with the *Hydrocharides*.

The stalks, both of the leaves and flowers, spring directly from the root. They vary in length from one foot to five or six, according to the depth of the water. The petioles are somewhat semicircular, the scapes round. Both are perforated throughout by long tubes or air-vessels which serve to float them. The leaves, which swim on the surface, are nearly round with a cleft or sinus extending to the centre, at which the petiole is inserted in a peltate manner. The lobes on each side of this sinus are prolonged into an acute point. The upper surface is of a bright glossy green almost without veins; the lower surface is reddish and marked by a multitude of strong prominent veins diverging from the centre. The calyx has four lanceolate leaves, green without and white within. Petals numerous, lanceolate, of a delicate whiteness, with sometimes a tinge of lake on the outside. Stamens numerous, yellow, in several rows; the filaments dilated, especially the outer ones, so as to resemble petals; the anthers in two longitudinal cells growing to the filaments and opening

inwardly. The stigma has from twelve to twenty four rays, very much resembling abortive anthers, at first incurved, afterwards spreading. At the centre is a solid hemispherical protuberance, usually called a nectary, but which appears to me more like the true stigma.

The roots of this plant are among the strongest astringents, and we have scarcely any native vegetable which affords more decided evidence of this property. When fresh, if chewed in the mouth, they are extremely styptic and bitter. Their decoction instantly strikes a jet black colour with sulphate of iron, and yields a dense, white precipitate to a solution of gelatin. With alcohol it deposits a slight flocculent substance resembling fæcula. Tannin and gallic acid in large quantities are to be considered its most characteristic ingredients.

The flowers have a delicious odour, hardly surpassed by any perfume which the summer produces. This fragrance is perfect only when the flowers are fresh, and, as they droop, becomes contaminated with the common smell of aquatic plants. It is peculiar in its character, and resembles that of no other plant with which I am acquainted. I have several times attempted to separate this perfume by distillation both with

water and spirit, but have never succeeded in preserving it in the faintest degree. It is much more fugacious than the perfume of roses, and seems to be destroyed by the application of heat. Possibly the employment of a large quantity of flowers at a time might yield a better product. The stamens appear more odorous than the petals, or at least preserve their odour longer in drying.

The roots of the water lily are kept by most of our apothecaries, and are much used by the common people in the composition of poultices. They are, no doubt, often injudiciously applied to suppurating tumours, since their astringency must be rather discutient, than promotive of suppuration. They are occasionally used by physicians in cases where astringent applications are called for, and answer a purpose somewhat analogous to that of lead poultices and alum curds. The roots, which, when fresh, are large and fleshy; in drying, lose a great part of their weight and size, becoming spongy and friable.

The *Nymphæa alba* of Europe, which appears perfectly similar in its qualities to the American plant, was celebrated by the ancients, [Note C.] as an antaphrodisiac, and as a remedy in dysentery and some other morbid discharges. To the

latter purpose its astringency might, in some instances, make it well suited. The roots and seeds of the *Nymphæa lotus* were used by the ancient Egyptians as bread.

BOTANICAL REFERENCES.

Nymphæa odorata, WILLD. *Sp. pl.* ii. 1153.—*Bot. Mag.* 819.—*Bot. Repository*, 297.—PURSH, ii. 368.—*Nymphæa alba*, MICHAUX, i. 311.—WALTER, *Carol.* 155. *Castalia pudica*, SALISBURY, *Annals of Bot.* ii. 71.

MEDICAL REFERENCE.

CUTLER, *Amer. Transactions*, i. 456.

PLATE LV.

- Fig. 1. *Leaf and flower of Nymphæa odorata.*
- Fig. 2. *Different stamens from the same flower.*
- Fig. 3. *Stigma.*
- Fig. 4. *Section of the germ.*
- Fig. 5. *A cell of the germ magnified.*
- Fig. 6. *Section of the scape.*
- Fig. 7. *Section of petiole.*

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BOTANICAL REFERENCES

Nymphaea odorata, Willd. Sp. Pl. 4: 1153—Willd. 711—
Bot. Repository, 187—Pursh, in 588—*Nymphaea alba*, Michx.
1811—Willd. Catol. 135: *Catalpa pudica*, Cassin. 1811
of Bot. 11: 71.

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PLATE I.

- Fig. 1. Leaf and flower of *Nymphaea odorata*.
- Fig. 2. Different stages from the same flower.
- Fig. 3. Stigma.
- Fig. 4. Section of the ovary.
- Fig. 5. 2 cell of the germ sac.
- Fig. 6. Section of the ovary.
- Fig. 7. Section of the ovary.



Prinos verticillatus

Scutell. & Jussieu

PRINOS VERTICILLATUS.

Around the leaves have fallen in autumn, this shrub becomes conspicuous by its glossy scarlet berries, which adorn its branches, for a long time, in the state of the branches. Of the objects which impart any brilliancy to this season of decay, the most noticeable are those which change the hue of their leaves from green to red, as the oaks, the vaccinia, &c. those which have been in the Hamamelis, and those whose fruit attains its maturity under the influence of frost, and appears fresh and vegetating, while other things are withering about them. The species of Prinos are of the last description.

This genus consists of shrubs, a part of which are deciduous, and a part evergreen; bearing small lateral or axillary flowers. It is nearly

*Prinos verticillatus*

J. Smith del.

PRINOS VERTICILLATUS.

Black Alder.

=

PLATE LVI.

AFTER the leaves have fallen in autumn, this shrub becomes conspicuous by its glossy scarlet berries, which adhere in bunches, for a long time, to the sides of the branches. Of the objects which impart any liveliness to this season of decay, the most noticeable are those which change the hue of their leaves from green to red, as the oaks, the vaccinia, &c. those which flower late, as the Hamamelis, and those whose fruit attains to maturity under the influence of frost, and appears fresh and vegetating, while other things are withering about them. The species of *Prinos* are of the last description.

This genus consists of shrubs, a part of which are deciduous, and a part evergreen; bearing small lateral or axillary flowers. It is nearly

related to the *Ilices* or Hollys, differing chiefly in the number of its parts. Its character is formed by a six cleft calyx, a monopetalous subrotate six cleft corolla, and a six seeded berry. The *Prinos verticillatus* has its leaves deciduous, oval, serrate, acuminate, slightly pubescent beneath; flowers axillary, aggregate.

These shrubs have usually been referred to *Hexandria Monogynia*. The present species and some others having different flowers on separate plants, Michaux was induced to place them in *Dicecia*. The natural orders to which they are assigned are *Dumosæ* of Linn. and *Rhamni* of Juss.

The Black Alder, for so the shrub is usually called, is found in swamps and about the edges of streams and ponds from Canada to the Southern states. It is irregular in its growth, but most commonly forms bunches six or eight feet in height. The leaves are alternate or scattered, on short petioles, oval, acute at base, sharply serrate, acuminate, with some hairiness, particularly on the veins underneath. The flowers are small, white, growing in little tufts or imperfect umbels, which are nearly sessile in the axils of the leaves. Calyx small, six cleft, persistent, Corolla monopetalous, spreading, without a tube,

the border divided into six obtuse segments. The stamens are erect, with oblong anthers. In the barren flowers they are equal in length to the corolla, in the fertile ones, shorter. The germ, in the fertile flowers, is large, green, roundish, with a short neck or style, terminating in an obtuse stigma. These are followed by irregular bunches of bright scarlet berries, which are roundish, supported by the persistent calyx, and crowned with the stigma, six celled, containing six long seeds, which are convex outwardly and sharp edged within. These berries are bitter and unpleasant to the taste, with a little sweetness and some acrimony.

The bark of the Black alder is moderately bitter, but inferior in this respect to many of our shrubs and trees. It discovers very little astringency either to the taste, or to chemical tests. A decoction which I made of the dried bark underwent no alteration on the addition of dissolved gelatin, and only changed to a dark green with the sulphate of iron. Alcohol produced hardly any change. The tincture, in alcohol, was found moderately bitter, and was not altered by water.

The Black alder has had a considerable reputation as a tonic medicine, perhaps more than it

deserves. The late Professor Barton tells us, that the bark has long been a popular remedy in different parts of the United States, being used in intermittents and some other diseases as a substitute for the Peruvian bark; and on some occasions, he thinks it more useful than that article. "It is employed both in substance and in decoction, most commonly, however, in the latter shape. It is supposed to be especially useful in cases of great debility accompanied with fever; as a corroborant in anasarca and other dropsies, and as a tonic in cases of incipient sphacelus or gangrene. In the last case," he says, "it is unquestionably a medicine of great efficacy. It is both given internally and employed externally as a wash."

Dr. Thacher recommends a decoction or infusion of the bark taken internally in doses of a teacupful, and employed also as a wash, for the cure of cutaneous eruptions, particularly of the herpetic kind.

I have had but little experience with the bark of the *Prinos* which gave me much satisfaction. Indeed the tests of tonic remedies are of a more ambiguous kind than those of most other medicines. Vegetable barks, which are bitter and astringent, are generally tonic, if they

have no more striking operation; and in this property they differ in a degree somewhat proportionate to their bitterness and astringency. Judging by these criterions, the *Prinos* is not entitled to hold a very exalted rank in the list of tonics. As a bitter it is at best but of the second rate, and in astringency it falls below a multitude of the common forest trees.

The berries are recommended by the writers above cited, as possessing the same tonic properties with the bark. They certainly possess some activity, which, in large quantity, is not of the tonic kind. I have known sickness and vomiting produced in a person by eating a number of these berries found in the woods in autumn.

BOTANICAL REFERENCES.

Prinos verticillatus, LINN, *Sp. pl.*—PURSH, i. 220.—*Prinos Gronovii*, MICHAUX, ii. 236.—*Prinos padifolius*, WILLD. *Enum. Berol.* 394.

MEDICAL REFERENCES.

B. S. BARTON, *Collections*, ii. 5.—THACHER, *Disp.* 324.

PLATE LVI.

Fig. 1. *Prinos verticillatus*, a branch in flower.

Fig. 2. Ripe berries.

Fig. 3. Calyx magnified.

Fig. 4. The rest of the flower ditto.

Fig. 5. Stamen of the barren flower magnified.

Fig. 6. Germ of the fertile flower ditto.

PLATE LII

- Fig. 1. Branch of *Salix caprea*, a branch in flower.
- Fig. 2. *Salix caprea*.
- Fig. 3. *Salix caprea*.
- Fig. 4. The root of the *Salix caprea*.
- Fig. 5. Stamen of the *Salix caprea*.
- Fig. 6. Germ of the *Salix caprea*.



Salix caprea



Sabbatia angularis

Levin & Smith.

SABBATIA ANGULARIS.

American Centaury.

PLATE LVII.

UNDER the name of *Chironia angularis*, this plant has been familiar to physicians in the United States as a native bitter. As it wants the most distinguishing characters of *Chironia*, while it has others of a very different kind, particularly in the anthers and stigma; I have followed the example of Pursh and others in referring it to the genus *Sabbatia* of Adanson.

This genus is characterised by a persistent calyx from five to twelve parted; a corolla from five to twelve parted; anthers finally revolute; stigma two parted, spiral; capsule one celled. The *Sabbatia angularis* differs from the rest of the genus in being erect, the leaves clasping, peduncles elongated and corymbose, segments of the calyx lanceolate, half as long as the corolla; stem square and winged.



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Sabbatia angularis

Armin & Smith.

SABBATIA ANGULARIS.

American Centaury.

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Class *Pentandria*, order *Monogynia*; natural orders *Rosaceæ*, Linn. *Gentianæ*, Juss.

This plant grows in damp rich soils throughout the Middle and Southern states, and is most commonly known by the name of *Centaury*. It is commonly from one to two feet high. The stem is erect, smooth, square, with the angles winged. Branches axillary, opposite. The leaves are opposite and ovate, but vary in length and width. They are heart-shaped at base, clasping half the stem, nerved, smooth, entire, acute. Flowers terminal, forming a large corymb. Tube of the calyx angular, with five broad segments. Corolla five parted with oval segments twice as long as the calyx. The anthers are oblong and slightly recurved at the time when the flower first opens. After shedding their pollen they become revolute and curl up, but never assume the spiral form like the anthers of *Chironia*. Germ ovate; style longer than the stamens, declined; stigma two parted, the segments separate at first, but gradually becoming twisted spirally together. Capsule one celled, two valved.

Every part of this plant is a pure and very strong bitter. In this quality, as well as in its medicinal properties, it is resembled by several

other species of the same genus. An extractive principle appears to be the seat of this property, as it is communicated alike to alcohol and water, and as the solutions in these fluids do not occasion precipitates from each other. There appears to be no astringency in the vegetable.

In the collections for an American Materia Medica by the late Professor Barton, we are told that this plant is a valuable tonic bitter resembling the Centaury of Europe, for which it was used by some practitioners on the supposition of its being the same plant. It had long been a popular remedy, and was much employed in the yellow fever of Philadelphia, in 1793.

In Mr. Elliott's Botany of the Southern states, we are told that the plant, in South Carolina, is a common remedy in intermittent fever. Some of the other species of the same family, particularly *S. gracilis*, are equally efficacious. It is deserving of remark, that a great number of vegetables, belonging to the same natural order, are highly bitter, and approved as tonic remedies.

From the use I have made of the Sabbatia, I have no hesitation in attesting its utility. It seems to me to rank among the more pure or simple bitters, and acts usefully as a stomachic and promoter of appetite and digestion. Beyond

this, I have no experience with it. It may be given in substance or in infusion, but the latter mode is generally preferred. This form is one in which it appears to be largely used by physicians in the Middle states. Dr. Chapman tells us, it is resorted to extensively by every class of practitioners, regular and irregular, in the intermittent and remittent fevers. He thinks it has the advantage over Peruvian bark of being susceptible of employment in every stage of these diseases.

BOTANICAL REFERENCES.

Sabbatia angularis, PURSH, *Flora Amer.* i. 137.—ELLIOTT, *Flora* i. 285.—*Chironia angularis*, WILLD. *Sp. pl.* i. 1067.—MICHAUX, *Flora*, i. 146.

MEDICAL REFERENCES.

B. S. BARTON, *Coll.* i. 15.—CHAPMAN, *Therapeutics*, ii. 417.—ELLIOTT, *l. c. supra*.

PLATE LVII.

Fig. 1. *Sabbatia angularis*.

Fig. 2. The stamen before it bursts, magnified.

Fig. 3. Stamen after bursting, do.

Fig. 4. Pistil magnified with the stigmas not yet twisted.

Fig. 5. Do. the stigmas having become spiral.

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BOTANICAL REFERENCES

Sabratia angustata, Poir., *Flora*, 1: 137. — Elliott, *Flora*, 1: 280. — *Chironia angustata*, Wimmer, *Flora*, 1: 1007. — *Minax*, *Flora*, 1: 140.

MEDICAL REFERENCES

B. S. Barton, *Coll. L. 18*. — *Chamaea*, *Therapeutic*, 1: 117. — Elliott, *L. 1*, 290.

PLATE LVIII

- Fig. 1. *Sabratia angustata*.
- Fig. 2. The stem before it bursts, magnified.
- Fig. 3. Stem after bursting.
- Fig. 4. Petal magnified with the stigma not yet folded.
- Fig. 5. The stigma before it bursts, magnified.



Erythronium Americanum

ERYTHRONIUM AMERICANUM.

Common Red-flower.

1827. 1828.

For a number of years the *Erythronium* was considered as a monotypic genus, the only species, the *E. americanum* of Pursh and Willd. The American plant was distinguished by Willd. as a variety of the European, differing only in colour. Later botanists have with propriety separated it, and beside this one or two other American species have been added to the genus.*

The only species called *E. florum* by Lamour., and *E. florum* is perhaps not exceeded by any other in the beauty of its flowers.

* The name *E. florum* is now given to a species of *Erythronium* which is found in the mountains of Canada, which he calls *E. florum*. It is a very different species from the American. In all the specimens gathered by the author, the leaves were very unequal, one being twice the size of the other; the scape had also a lanceolate bract near the top. The flower was yellow and about half the size of *E. americanum*.



ERYTHRONIUM AMERICANUM.

Common Erythronium.

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PLATE LVIII.

FOR a considerable time the genus *Erythronium* was considered as containing only one species, the *E. dens canis* of Europe and Asia. The American plant was considered, by Michaux, as a variety of the European, differing only in colour. Later botanists have, with propriety, separated it, and besides this, one or two other American species have been added to the genus.*

The natural order, called *Liliaceæ* by Linnæus, and *Lilia* by Jussieu, is perhaps not exceeded by any other, in the uniform elegance of all its spe-

* My friend Mr. F. Boott discovered a new species of *Erythronium* on the Camel's rump mountain in Vermont, which he calls *E. bracteatum*. Its character is *E. foliis inæqualibus, scapo bracteato*. In all the specimens gathered by that gentleman, the leaves were very unequal, one being twice the size of the other; the scape had also a lanceolate bracte near the top. The flower was yellow and about half the size of *E. Americanum*.

cies. The Lily, Tulip, Crown imperial, and Gloriosa are specimens of this order. They belong to the same artificial class and order *Hexandria trigynia*, and have a close affinity in all the parts of their structure. The Erythronium, which is generally called, I know not for what reason, *Dog's tooth violet*, is one of the smallest of the order.

This genus has *no calyx*. *Its corolla is inferior, six petalled; the three inner petals with a callous prominence on each edge near the base.* The common American plant has its *scape naked*, its *leaves lanceolate and involute at the point*; and its *style club-shaped and undivided*. It is an early flowering plant, being in blossom in the first part of May. It grows in woods and fields in the Northern and Middle states.

The root is a solid bulb, situated deep in the ground, brown outside, and white and homogeneous within. The whole plant is smooth and glossy. Scape naked, slender. Leaves two, nearly equal, lanceolate, veinless, of a dark brownish green, clouded with irregular spots, sheathing the scape with their base, and terminating in an obtuse callous point. Flower solitary, drooping. Petals six, lanceolate, yellow, the three outermost partly crimson on the outside,

the three innermost having an obscure tooth on each side near the base. In a clear sun the petals are expanded and revolute, but at night and on cloudy days, they are nearly closed. Filaments flat, anthers oblong-linear. Germ obovate, style longer than the stamens, club-shaped, three lobed at top and terminating in three distinct, but not detached, stigmas. Capsule oblong-obovate, somewhat pedicelled.

The bulb of this plant, judging from its texture and taste, is almost wholly farinaceous. When dry, it is mealy and free from any unpleasant flavour. Having lost my specimens of the root at the time of preparing this article, I was unable to submit this part to chemical examination. A tincture was prepared from some dried leaves and flowers, which gave evidence of resin being present, when tested with alcohol. Water distilled from the same parts had a rather disagreeable odour.

This vegetable possesses the power of acting on the stomach as an emetic. About twenty five grains of the green root and forty of the recently dried root have produced nausea and vomiting. When the root is fully and thoroughly dried, or when it has been exposed to heat, it appears to lose this property in a great measure.

In its power of acting on the alimentary canal, it resembles many other plants, which are related to it in botanical habit. The Squill, Colchicum, and Aloe are examples of this class, and even the common Daffodil and Tulip are found to be emetic. I have known a family of children to be taken with violent vomiting from having, by mistake, dug up, roasted and eaten some Tulip roots, supposing them to be Artichokes.

It is probable that the medicinal activity of the Erythronium is of a volatile nature, capable of being dissipated by heat. Its farinaceous portion, when duly separated, is no doubt innocuous. Gmelin, in his Flora Sibirica, states, that the Tartars collect and dry the roots of Erythronium *dens canis*, and boil them either with milk or broth, and consider them as very nutritious food. They are said nearly to resemble salep. It is remarkable that farinaceous roots, which possess active and even virulent qualities, do not impart them to the fæcula, which constitutes so large a portion of their bulk. The different species of Arum, Calla, and the Jatropha Manihot are examples of this fact, affording nutritious bread, although their crude juices are more or less poisonous.

The leaves of the American Erythronium are said to be more active than the root, but on this subject I am not fully informed. It is probable that the recent leaves have more activity than the dry.

BOTANICAL REFERENCES.

Erythronium Americanum, KER, *Bot. Mag. t.* 1113.—NUTTALL, *Genera*, i. 223.—E. lanceolatum, PURSH, i. 230.—E. longifolium, POIRET, *Encycl. Methodique*.—E. flavum, SMITH, *Rees' Cycl.*—E. dens canis, MICHAUX, *Flora*, i. 198.

PLATE LVIII.

Fig. 1. *Erythronium Americanum*, the flower rather more drooping than common.

Fig. 2. One of the inner petals.

Fig. 3. Stamen.

Fig. 4. Pistil.

Fig. 5. Stigma magnified.

Fig. 6. Root.

XANTHOXYLUM FRAXINEUM.

Prickly Ash.

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PLATE LIX.

THE Prickly Ash is a shrub of middling height, found in woods and moist or shady declivities in the Northern, Middle and Western states. It is rare in Massachusetts and the states north of it, its localities being very circumscribed. After I had taken pains to procure specimens from Connecticut, I accidentally discovered a thicket of the shrubs in a wood in Medford, six miles from Boston.

Late botanists have placed the genus *Xanthoxylum* in *Pentandria Pentagynia*, although it is diœcious, or rather polygamous. Its *calyx* is inferior, five parted ; *corolla* none ; *capsules* from three to five, one seeded. The *X. fraxineum* is prickly, the leaves pinnate ; leaflets ovate, subentire, sessile, equal at base ; umbels axillary.



Xanthoxylum fraxineum

XANTHOXYLUM FRAXINEUM.

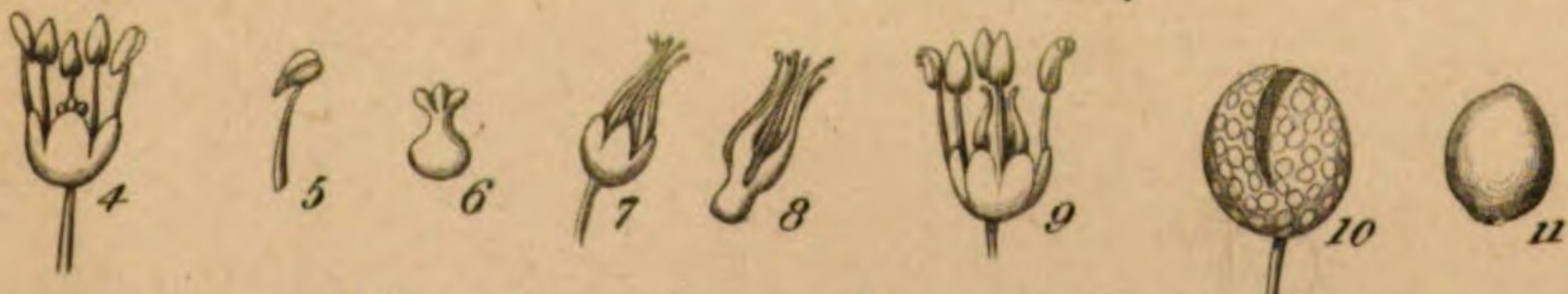
Frax. Frax. 185.

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PLATE LIX.

The Frax. Frax. 185 is a shrub of middling height found in woods and moist or shady declivities in the Northern, Middle and Western states. It is rare in Massachusetts and the states north of it, its localities being very circumscribed. After I had taken pains to procure specimens from Connecticut, I accidentally discovered a cluster of the shrubs in a wood in Medford, six miles from Boston.

Later botanists have placed the genus Xanthoxylum in *Pentagynia* *Pentagynia*, although it is *decussate* or rather *polygamous*. Its *calyx* is *inferior*, *free* parted; *corolla* none; *capsules* from *three* to *five*, *one* seeded. The *X. fraxineum* is *polygamy*, the *leaves* *planate*; *leaflets* *ovate*, *subentire*, *sessile*, *equal* at *base*; *umbels* *axillary*.



Xanthoxylum fraxineum

Linnaeus placed the *Xanthoxyla* in his natural order *Dumosaë*, but Smith thinks them better arranged with the *Hederaceæ*. Jussieu places them with his *Terebintaceis affinia*.

The branches of the Prickly ash are covered with strong, sharp prickles, arranged without order, though most frequently in pairs at the insertion of the young branches. Leaves pinnate, the common petiole sometimes unarmed and sometimes prickly on the back. Leaflets about five with an odd one, nearly sessile, ovate, acute, with slight vesicular serratures, somewhat downy underneath. The flowers appear in April and May before the leaves are expanded. They grow in sessile umbels about the origin of the young branches, are small and greenish. I have observed them of three kinds, making the shrub strictly polygamous. In the staminiferous flower the calyx is five leaved, the leaves oblong, obtuse, erect. Stamens five with subulate filaments and sagittate four celled anthers. In the place of pistils are three or four roundish corpuscles supported on pedicels from a common base. The perfect flowers, growing on the same plant, have the calyx and stamens like the last; the germs are three or four, pedicelled, and having erect, converging styles nearly as long as the

stamens. The pistilliferous flowers grow on a separate shrub. Calyx smaller and more compressed. Germs about five, pedicelled; styles converging into close contact at top, and a little twisted. Stigmas obtuse. All the flowers are destitute of corolla. Each fertile flower produces an umbel of as many stipitate capsules as there were germs in the flower. These capsules are oval, covered with excavated dots, varying from green to red, two valved, one seeded; the seed oval, blackish.

The bark of the Prickly ash has a slight aromatic flavour, combined with a strong pungency, which is rather slow in manifesting itself in the mouth. The leaves are more aromatic, very much resembling, in smell, the leaves of the Lemon tree. The rind of the capsule is highly fragrant, imparting to the fingers, when rubbed between them, an odour much like the oil of lemons. The odorous portion is an essential oil residing in transparent vesicular points on the surface of the capsules and about the margins of the leaves. The acrimony, which resides in the bark, has its foundation in a different principle; being separated by decoction, but not by distillation; at least none of it came over in my experiments, which were repeated with both the

green and dried bark. The water in which the bark is boiled has a peculiar pungent heat, which is not perceived when the liquid is first taken into the mouth, but gradually develops itself by a burning sensation on the tongue and fauces. It retains this acrimony after standing a week and more. The leaves do not appear to possess the pungency of the bark, and impart no acrimony to the water in which they are boiled. They abound in mucilage, which coagulates in large films when alcohol is added to the decoction. They seem to possess more astringency than the bark, and strike a black colour with sulphate of iron, while solutions, made from the bark, are but moderately changed by the same test. The alcoholic tincture of the bark is bitter and very acrid. Its transparency is diminished by adding water, and after standing some time it becomes very turbid. Whether the acrimony of this shrub resides in a peculiar acrid principle, or whether it belongs to the resin and becomes miscible with water in consequence of the presence of mucilage, may be considered as yet uncertain.

The Prickly ash has a good deal of reputation in the United States as a remedy in chronic rheumatism. In that disease its operation seems analogous to that of Mezereon and Guaiacum,

which it nearly resembles in its sensible properties. It is not only a popular remedy in the country, but many physicians place great reliance on its powers in rheumatic complaints, so that apothecaries generally give it a place in their shops. It is most frequently given in decoction, an ounce being boiled in about a quart of water. Dr. George Hayward, of Boston, informs me, that he formerly took this decoction in his own case of chronic rheumatism with evident relief. It was prepared as above stated, and about a pint taken in the course of a day, diluted with water sufficient to render it palatable by lessening the pungency. It was warm and grateful to the stomach, produced no nausea nor effect upon the bowels, and excited little, if any, perspiration.

I have given the powdered bark in doses of ten and twenty grains in rheumatic affections with considerable benefit. A sense of heat was produced at the stomach by taking it, but no other obvious effect. In one case it effectually removed the complaint in a few days. I have known it, however, to fail entirely in obstinate cases, sharing the opprobrium of failure with a variety of other remedies.

The Prickly ash has been employed by physicians in some cases as a topical stimulant.

It produces a powerful effect when applied to secreting surfaces and to ulcerated parts. In the West Indies much use has been made of the bark of another species, the *Xanthoxylum Clava Herculis*, in malignant ulcers, both internally administered and externally applied. Communications relating to its efficacy may be found in the eighth volume of the Medical and Physical Journal, and the fifth volume of the Transactions of the Medical Society of London.

By an ambiguity which frequently grows out of the use of common or English names of plants, the *Aralia spinosa*, a very different shrub, has been confounded with the *Xanthoxylum*. The *Aralia*, called *Angelica tree*, and sometimes *Prickly ash*, is exclusively a native of the warmer parts of the United States, being not found, to my knowledge, in the Atlantic states north of Virginia. Its flavour and pungency, as well as its general appearance, are different from those of the true *Prickly ash*. It is nevertheless a valuable stimulant and diaphoretic, and in Mr. Elliott's Southern Botany, we are told that it is an efficacious emetic. For the latter purpose it is given in large doses, in infusion.

The name *Xanthoxylum*, signifying *yellow wood*, was originally given by Mr. Colden. The

spelling has since been unaccountably changed to *Zanthoxylon* in a majority of the books which contain the name. The etymology, however, can leave no doubt of the true orthography.

BOTANICAL REFERENCES.

Xanthoxylum fraxineum, SMITH, *Rees' Cycl.* No. 12.—*Z. fraxineum*, PURSH, i. 209.—*Z. clava Herculis* β . LINNÆUS, *Sp. pl.*—*Z. ramiflorum*, MICHAUX, *Flora*, ii. 235.—*Fagara fraxini folio*, DUHAMEL, *Arb. v. t.* 97.

MEDICAL REFERENCES.

B. S. BARTON, *Collections*, i. 25, 52 ; ii. 38.—THACHER, *Dispensatory*, sub *Aralia spinosa*.

PLATE LIX.

Fig. 1. *Xanthoxylum fraxineum* in fruit.

Fig. 2. A barren branch in flower.

Fig. 3. Fertile branch in flower.

Fig. 4. Barren flower magnified.

Fig. 5. Stamen, do.

Fig. 6. Abortive germ of the barren flower, do.

Fig. 7. Fertile flower, do.

Fig. 8. Pistils of ditto, do.

Fig. 9. Perfect flower, do.

Fig. 10. Capsule, do. beginning to open.

Fig. 11. Seed, do.

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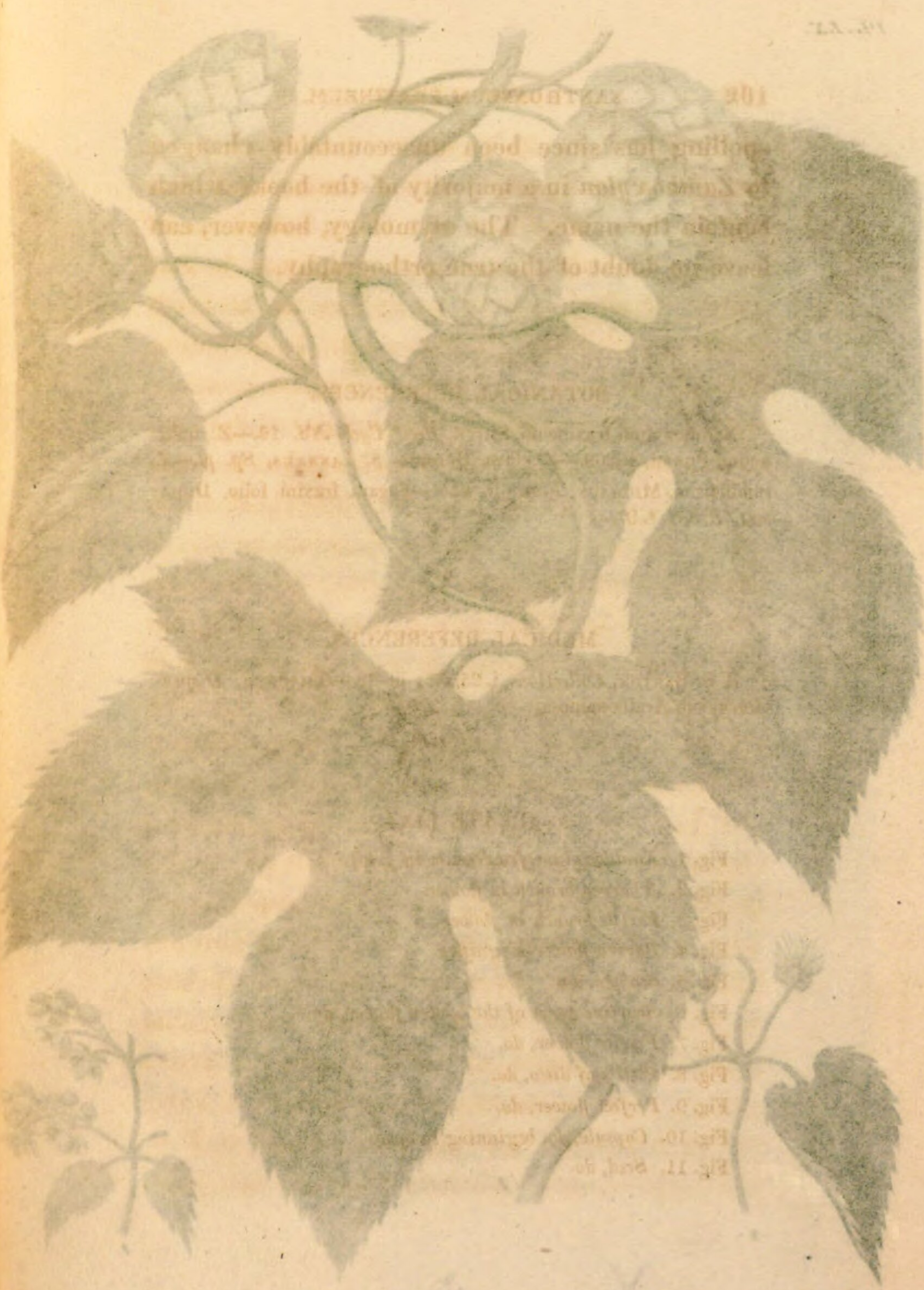
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Kantusia repens



Humulus lupulus

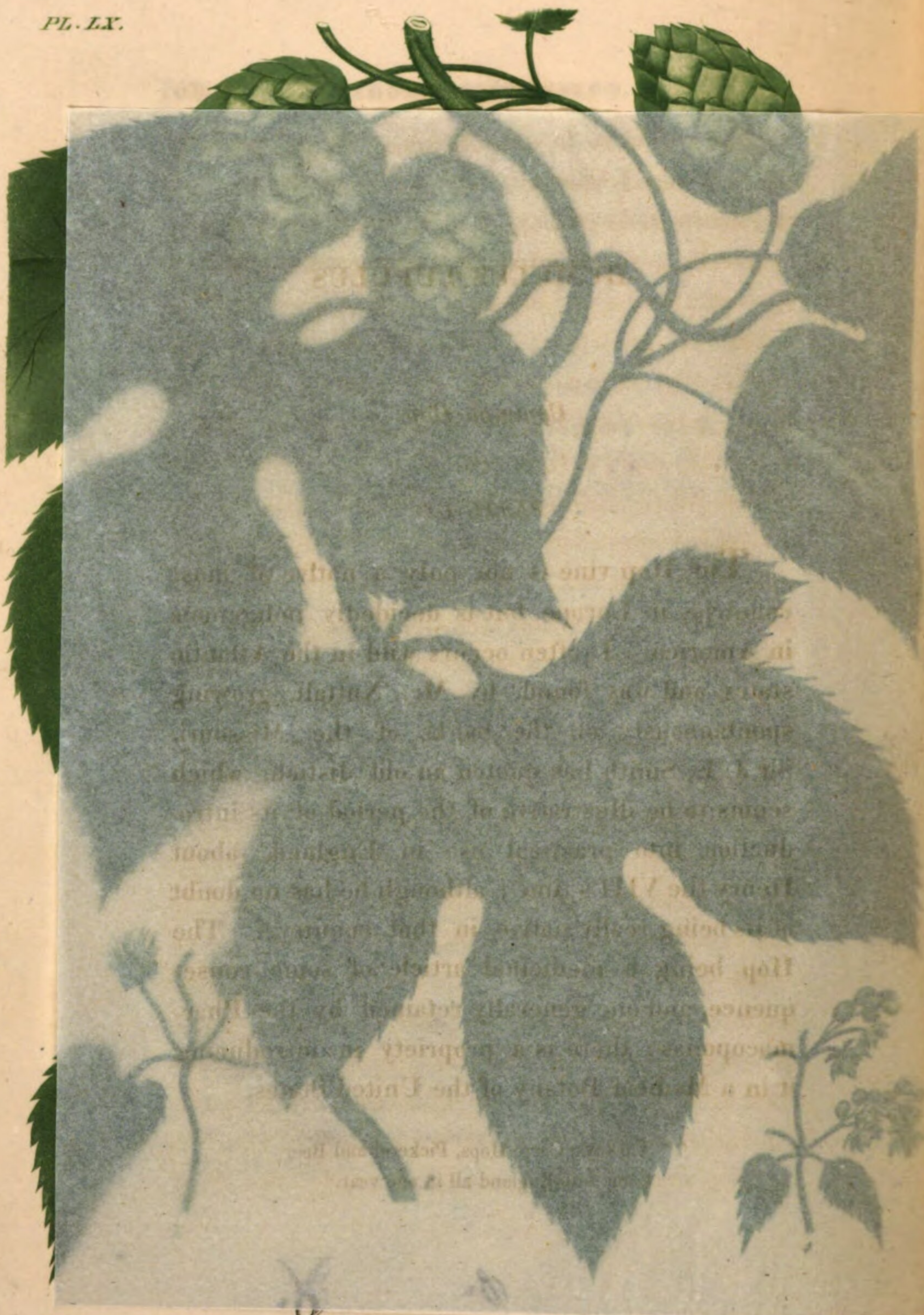
HUMULUS LUPULUS.

Common Hop.

PLATE LX.

THE Hop vine is not only a native of most countries in Europe, but is decidedly indigenous in America. It often occurs wild in the Atlantic states, and was found, by Mr. Nuttall, growing spontaneously on the banks of the Missouri. Sir J. E. Smith has quoted an old distich, which seems to be illustrative of the period of its introduction into practical use in England, about Henry the VIII's time; although he has no doubt of its being really native in that country.* The Hop being a medicinal article of some consequence, and one generally retained by the Pharmacopœias; there is a propriety in introducing it in a Medical Botany of the United States.

* "Turkeys, Carp, Hops, Pickered and Beer,
Came into England all in one year."



Humulus lupulus

Arms & Sons

HUMULUS LUPULUS.

Common Hop.

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* "Turkeys, Carp, Hops, Pickerel and Beer
Came into England all in one year."

The genus *Humulus*, which has only a single species, is found in the Linnæan class *Diœcia*, and order *Pentandria*. It belongs to the natural orders *Scabridæ*, Linn. and *Urticæ*, Juss. Its barren flowers have a *calyx of five leaves and no corolla*. The fertile flowers have for their *calyx the scales of an ament, each two flowered; corolla of one petal, lateral; styles two; seeds solitary, invested with the corolla*.

The Hop vine is an ornamental plant, much more frequently seen cultivated than wild, and climbing to a great height. The root is perennial. Stems annual, twining from right to left, angular, rough, with minute reflexed prickles. Leaves opposite, on long winding petioles, the smaller ones heart-shaped, the larger ones three or five lobed, serrated, veiny and extremely rough. Flowering branches axillary, angular and rough. Stipules two or four, between the petioles, ovate, reflexed. Flowers numerous, and of a greenish colour. Those of the barren plants are very numerous and paniced. Their calyx has five oblong, obtuse, spreading, concave leaves. Corolla wanting. Stamens short, the anthers oblong, and bursting by two terminal pores. The fertile flowers, growing on a separate plant, are in the form of an ament, having each pair of

flowers supported by a calyx-scale, which is ovate, acute, tubular at base. Corolla of one scale, obtuse, smaller than the calyx and placed one on each side of it, infolding the germ by their edge. Germ roundish, compressed ; styles two, short ; stigmas long, subulate, downy. The scales of the calyx and corolla swell into a kind of persistent cone or strobile, each flower producing a roundish seed.

The full grown strobiles constitute the part which is preserved for use and sold in its dried state under the name of Hops. These have an aromatic, heavy odour, and a strong, bitter, but not unpleasant taste. Besides the bitterness, they have the characteristic taste which is found in the leaves and other portions of the plant. On the outside of the scales of the calyx and corolla and near their base, is secreted a semi-resinous substance in the form of minute, yellow, transparent globules. This secretion appears to be the seat of the whole bitterness for which the hops are generally prized and consumed. Dr. Smith, in the English Botany, has observed, that the fragrance and essential properties of the hop reside in this resinous substance ; and more recently an interesting series of experiments has been published by Dr. A. W. Ives, of New York,

to show that this portion may effectually supersede all the rest, in common practical use.

This substance, when separated from the hops by rubbing and sifting, exists in the form of a fine yellow powder. It is adhesive when rubbed between the fingers, and becomes agglutinated by moderate heat. It is very inflammable, and burns entirely out with a white flame, leaving a light cinder.

Dr. Ives has made a variety of experiments with this powder, from which he concludes that it consists of tannin, extractive matter, a bitter principle, wax, resin, and a woody fibrous substance, besides the aromatic principle, which he was unable to separate in the form of volatile oil. It may be observed, that the powder, as employed by him, being obtained from the hops by agitation and sifting, must necessarily contain a certain portion of chaff or minute fragments of the scales; and that these are apparently the seat of the tannin, the woody insoluble substance, and possibly of some other ingredients. If the pure secretion be carefully separated from the scales by brushing, and dissolved in alcohol, it does not undergo any change of colour from the sulphate of iron; although the scales themselves, as well as the

leaves of the plant, strike a black colour when treated with that salt.

Hops have long been made an ingredient in malt liquors on account of the agreeable flavour they communicate, and also from a preservative quality which they are supposed to exert in preventing acescency in those liquids. Dr. Ives has shown that a prodigious saving of expense might be made by brewers, if this powder were separated at an early period, and used instead of the hops themselves. He was able, without much trouble, to separate fourteen ounces of the powder from six pounds of hops, and concludes, that if the hops were treated, during the process of gathering and drying, with a view to the preservation of the powder, they would yield at least one pound in six. He has pointed out a vast saving, which would take place in the expense of transportation and storage, if an article containing all the strength of the hop, and occupying but small compass, were substituted for one which is of more than twenty times its bulk. An enormous loss would farther be prevented, which now takes place from the absorption produced by the hops, it being calculated that one barrel of wort is absorbed by every sixty pounds of hops used in brewing. He enumerates still

farther advantages which would result from the easier preservation of the article, its superior flavour, and the diminished chance of adulteration, arising from reduction of price.*

The researches of Dr. Ives are entitled to great commendation, as they seem to promise a highly economical improvement in an important branch of domestic manufacture. In Great Britain, where malt liquors are more extensively consumed than, perhaps, in any other country, the saving must be an object of more consequence, than with us. It remains to be ascertained whether any effectual and economical method of separating the powder from the strobiles can be brought into practical use.

In medical practice the hop has been found a decided and useful tonic. A fermented decoction, known by the name of hop beer, and usually formed from this article with the simple addition of treacle, is much used in the New England states. When made sufficiently bitter with the hops, and taken as a common drink at meals, it promotes digestion more than any of

* The term *Lupulin*, by which Dr. Ives designates the powder of the hop, is convenient and not objectionable for practical use. As a chemical term, however, it does not agree with those of similar termination employed in the science; which express proximate principles of vegetables &c. and not heterogeneous bodies.

the table liquors in common use. It is serviceable in dyspeptic complaints, and is particularly adapted to obviate the lassitude and debility felt by persons of relaxed habit in the spring, or on the approach of warm weather. A simple infusion has been employed for this purpose, but the fermented liquor derives a quality from the presence of carbonic acid, which renders it more agreeable, both to the palate and stomach.

The bitter principle of the Hop, in which its tonic property appears to reside, is abundantly soluble in water. Alcohol not only extracts this portion, but dissolves also the resinous constituents of the medicine. The tincture of hops is found to be bitter and aromatic, and to exert not only a strengthening effect on the viscera, but to influence considerably the nervous system in the character of an anodyne and soporific medicine.

I have employed the tincture of hops very often in practice, and have, on the whole, had quite as much reason to be satisfied with its tonic operation, as with that of any of the bitter tinctures in common use. Its narcotic power is slight when compared with that of opium, yet it nevertheless has, in certain cases, a decided property of procuring sleep. I have particularly

found it effectual in the case of persons advanced in life, who had been accustomed to the moderate, but increasing use of spirituous liquors ; and who at length have considered it impossible to procure a quiet night's sleep without a preparatory draught of this kind taken warm at bed time. In such cases I have found a teaspoonful of the tincture of hops to go as far in its composing effect, as two or three ounces of ardent spirit.

Mr. Freake, who published in the Medical and Physical Journal some account of the properties of this medicine, states that he had found it decidedly advantageous in erysipelas, in gout and in some other diseases. He considers its beneficial effects to arise from its alterative and tonic power on the system. He thinks it sedative, aperient and diuretic ; and a good antiseptic and corroborant in bowel complaints. In his practice he had found pain to be eased and rest procured with this medicine, when opium did not succeed.

Dr. Maton found that besides allaying pain and procuring sleep, the preparations of hops were capable of reducing the frequency of the pulse, and increasing its firmness in a direct manner. One drachm of the tincture and four grains of the extract given once in six hours reduced the pulsations from ninety six to sixty in

the course of twenty four hours. He found the extract very efficacious in allaying the pain of of articular rheumatism.

Some experiments of Dr. Bigsby and others have not been found to confirm the previous character of this article in all the foregoing respects, and its sedative powers have been called in question. As in most new medicines, its virtues have doubtless been exaggerated by its earliest advocates ; yet it is not on this account to be discarded from use. Although the narcotic powers of the hop are not of the most energetic kind, they nevertheless do exist, and the very circumstance of their mild and temperate influence renders them, in many cases, safer than those of more active drugs.

In regard to the lithontriptic power which has been imputed to hops both alone, and through the medium of malt liquors, it is not probable that they have any operation of this sort, beyond that of a palliative.

The external application of hops has long had the popular reputation of being anodyne and composing. A pillow of hops is thought instrumental in procuring sleep, but with what justice I am unable to say. Poultices and fomentations made of them are in repute as sedative applications for

painful swellings. When steeped in hot brandy and held in the mouth, they sometimes relieve the pain of a carious tooth. For all these purposes, no doubt, they often fail, yet there is little temerity in asserting that they are equally to be depended on in such cases, with the rest of the articles of the *Materia Medica*.

The most common form for internal use, where a sedative effect is desired, is that of the saturated tincture. The powder separated from the hops may be given in substance with a certainty of securing all their medicinal effects. This powder must be given in small doses, to be retained on the stomach and bowels. Dr. Bryorly found that twenty or twenty five grains left a sense of acrimony in the throat, and were followed by a good deal of nausea, and in some instances by purging.

The vine of the hop has been appropriated to some economical uses. In spring, when the young shoots first emerge from the ground, they are boiled and eaten as asparagus, and are accounted very salubrious. The fibres of the vine are strong and flexible and have been manufactured into a coarse cloth in Sweden and England, particularly for the sacks in which the hops are carried to market.

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PLATE LX.

Fig. 1. *Humulus lupulus* in fruit.

Fig. 2. Fertile flowers.

Fig. 3. Calyx and pistil of do. (the corolla omitted by mistake
of the engraver.)

Fig. 4. Barren flowers.

Fig. 5. Stamen magnified.

Radix vero sicca, pilulæ, sternutamenta ciet, naribus admoda;
posita tollunt. Quæ et reserpiæ contra perimones levantur.
formicationes in pedibus, verrucas et alioquin ad breve tempus im-
scabros ungues auferunt, necnon remouent stigmata deflent: itempus
aspice unde orandi, ut etiam crures cum dolore inducant. Quare
dore facio. Folia ex cantho renelle vim habent illitu exulcerandi, et
valde lenium et obor. Exaly: flore. Quædam simile buic;
accertinum, quod etiam stylis epulæ appellat. Est et tertium
canth, plures foliorum incisuris plurimum in Sardinia proveniens,
iuxta fluens hæretus. Alacum est lanuginosus, longiorque
thia et rursus, admoda con capillamentis, hellebori modo, foliis;
munic, rursus est, sed capillum alius. Radice nullo exigu, can-
substantia et pilulæ; flore, loto, inperium purpureo. Canthi
exercent. At etiam, quoniam cantho folius conat, sed latitudo
sunt species et vis tamen omnibus una, utis scilicet ac repellantur

 $\Omega \approx 10^8 \text{ s}^{-1}$

NOTES.

Note A.

RANUNCULI, quod aliqui apium agreste nominant, plura quidem sunt genera: at vis tamen omnibus una, acris scilicet ac vehementer exulcerans. Ac unum quidem coriandri foliis constat, sed latioribus, subalbidis et pinguibus: flore luteo, interdum purpureo. Caulis minimé crassus est, sed cubitum altus. Radice nititur exigua, candida et amara, adnatis ceu capillamentis, hellebori modo, fibrata: juxta fluentia nascitur. Alterum est lanuginosius, longioréque caule, pluribus foliorum incisuris, plurimum in Saridinia proveniens, acerrimum, quod etiam sylvestre apium appellant. Est et tertium valde parvum et odore gravi; flore aureo. Quartum simile huic, flore lacteo. Folia et caules tenelli vim habent illitu exulcerandi, et usque adeò urendi, ut etiam crustas cum dolore inducant. Quare scabros ungues auferunt, psoras removent, stigmata delent: itemque formicationes ac pensiles verrucas et alopecias ad breve tempus imposita tollunt. Quin et repente eorum decocto perniones foveantur. Radix verò sicca tritáque, sternutamenta ciet, naribus admota: dentium quoque dolores appensa levat, ipsos tamen rumpit.

Dioscorides. Interp. Sarraceni, Lib. ii. Cap. 206.

Note B.

Sponte jam patet, internum Euphorbii usum periculo plenum esse. Sed confirmant id infortunia, specialibus casibus subnata. Obiit quidam, cui empiricus illud imprudenter exhibuerat, dysenteria eodem die. Virgo venusta seni decrepito, se invita, desponsata ad mortem sibi conciliandam pulverem Euphorbii ingessit, unde dolores ventris atrocissimi, hypercatharses cum vomitionibus frequentissi-

mis, singultu, ardore ventriculi et faucium sitique inextinguibili, tandem sudores frigidi et animi deliquia: ex quibus angustiis tamen arte emersit. Nihilominus tamen quidam illud præcipere ausi sunt, et instar drastici, quod pituitam, sed potentius aquam, subduceret in iis, quibus venter nimis contra alia mitiora torpet, vel ut loqui amant, friget, in hydropicis præcipue admiserunt. Ita Ætius, Actuarius et Arabes non nulli. Galenus et Dioscorides tacent de vi ejus purgante. Omnes tamen, qui ore captum concedunt, cautionem summam injungunt, et connubium, cum iis, quæ acrimoniam ejus frangere valent, vel prægressam mitigationem desiderant. Hanc ipsam tentarunt oleo amygdalino, succo Citri, phlegmate Vitrioli, Mastiche, Croco, Tragacantha, Melle aliisque bene multis secundum varium de ejus natura conceptum. Sed ejusmodi correctiones vel non sufficiunt, vel, si sufficiunt, ipsam vim medicaminis destruunt. Minuere dosin vel rite illam diluere, aliis exemplis artis est. Ast nondum comprobata vera dosis est. Ad grana decem permittit Sennertus, alias non ineptus subdolæ Euphorbii vis judex; a grano uno ad octo cum semisse concedit Heurnius; a granis duobus sex vel octo Geoffroy. Omnibus hisce audacior et Fallopius, qui præceptoris sui Machesii auctoritate et propria experientia ductus, non dubitavit Euphorbii vetusti drachmam unam, rarius scrupulos quatuor, dare. Mixtum Cassia mitius deprehendit quam solutum, qua forma sitim intolerabilem et evacuationem largiorem creavit. Sed præstat usum internum eiusdem omnino negligere.

Murray Apperatus Medicaminum sub Euphorbia officinarum.

Note C.

Nymphæa in paludibus stagnantibusque aquis nascitur: folia veró habet Ægyptiæ fabæ similia, at minora oblongioraque, plura ab una eadémque radice prodeuntia: quorum alia super aquam quodammodo extant, alia in ea ipsa demerguntur: florem album, lilio similem, in quo medium croceum est. At cum defloruerit, calyculus rotundus, figura malo aut papaveris capiti similis, idemque niger, extuberat: in quo semen nigrum, latum, densum, atque gustanti lentum glutinosumve recluditur. Caulis est lævis, minimè crassus,

niger, Ægyptiæ fabæ cauli similis: radix nigra, scabra, clavæ similis, quæ autumnō secatur. Ea sicca, cum vino pota, cœliacis ac dysentericis auxiliatur, lienemque consumit. Stomachi quoque ac vesicæ doloribus sedandis ipsa radix imponitur, et alphas ex aqua emendat: alopeciis etiamnum cum pice imposita medetur. Eadē contra veneris insomnia bibitur, siquidem illa in totū adimit: quin et aliquot diebus continenter epota, genitale ita infirmit, ut arrigi minimē possit. Idem porro seminis quoque poti effectus est. Cæterū à nymphis nymphææ nomen sibi vendicasse creditur, quoniam loca amet aquosa. Plurima autem invenitur in Helide, Anygro ampe, et in Bœotiæ Aliarto.

Dioscorides interp. Sarraceni, iii 148.

riger. Erythrae labes canis similis: radix nigra, scabra, clavis simi-
 lis, quae autumnus recitat. Ha alicui, cum vino pota, coeliacis ac
 dysentericis auxiliatur, hemicranio consumit. Erythraei quodam ac
 vesicis doloribus sedandis ipsa radix imponitur, et alios ex aqua
 emendat: alopecis etiam cum hinc impoita medetur. Radem
 contra venas inascentis bibitur, signum illa in totum admittit: quin
 et alios diebus contrahit, quodammodo in infirmis, ut virgini
 tamen possit. Idem hinc venas quodam modo effectus est. Car-
 ternum a nymphis nymphae nomen sibi vendicare creditur, quoniam
 loca ariet aquosa. Plurima autem invenitur in Helide, Aegro
 et in Hecetis Alitae.

PHYTOLACCA

It has been already stated that the inco-
 nveniences in the emetic operation of this plant are
 its slow commencement, long continuance, and
 occasional narcotic effect. I have, since writing
 the article, become acquainted with instances of
 hyperchaemia, following the employment of this
 medicine in large doses. A physician informed
 me that having himself occasion for an emetic,
 he took twenty grains of Puly. Phytolaccae, which
 not operating readily he took twenty more within
 an hour. This large quantity brought on severe
 vomiting, which continued until his strength was
 exhausted. A hyperchaemia followed attended
 with inflammation of the bowels from which he was
 a week in recovering. In a few other instances
 I have known a decided effect take place on the
 rectum, producing diarrhoea for two or three

APPENDIX.

PHYTOLACCA DECANDRA.

It has been already stated that the inconveniences in the emetic operation of this plant are its slow commencement, long continuance, and occasional narcotic effect. I have, since writing the article, become acquainted with instances of hypercatharsis, following the employment of this medicine in large doses. A physician informed me that having himself occasion for an emetic, he took twenty grains of Pulv. Phytolaccae, which not operating readily he took twenty more within an hour. This large quantity brought on severe vomiting, which continued until his strength was exhausted. A hypercatharsis followed attended with inflammation of the bowels from which he was a week in recovering. In a few other instances I have known a decided effect take place on the retina, producing blindness for two or three

hours. In general, it may be considered improper to give large quantities of this medicine, or to accumulate it by the repetition of small quantities. In these respects it has not the safety of the officinal Ipecacuanha. See some remarks on this subject under the article *Euphorbia ipecacuanha*, *Vol. iii. p. 117.*

ARUM TRIPHYLLUM.

THE root of this plant has sometimes been taken internally as it would seem without injury. The late Dr. Osborne, of New York, informed me that he had given it in the form of confection, or in emulsion with milk and sugar, in cases of great prostration attending the advanced stages of typhoid fevers. He thought it useful as part of a cordial regimen, and had found that patients bore it as well as cayenne pepper or any similar stimulant. In the American Medical Recorder, for July 1820, Dr. Burgon, of Pennsylvania, has inserted some account of its beneficial operation in asthma, chronic, catarrh, and similar complaints. It is undoubtedly a stimulant of the most powerful kind, and when fresh should be taken with great caution. In its dried state it is uncertain in its strength, and sometimes wholly inert.

TRIOSTEUM PERFOLIATUM.

THAT the Aborigines made use of this plant in medicine is attested in Mr. Clayton's letter to Dr. Grew in the Philosophical transactions, Vol. VIII. of Hutton's abridgment. He says, "There is another herb which they call Indian purge. This plant has several woody stalks growing near three feet tall, and perfoliate; it bears yellow berries round about the joints. They only make use of the root of this plant." From this description it is sufficiently obvious that the plant in question was no other than *Triosteum perfoliatum*.

CICUTA MACULATA.

THE following is part of a letter from Dr. Richard Hazeltine of Lynn, Mass. dated May 9, 1818, which was accompanied by a root of *Cicuta maculata*, but received after I had printed the article on that plant.

"On Friday, the 17th of last month, between two and three o'clock P. M. I was called to see a boy aged four years, in the last struggles of

expiring life, from having eaten and swallowed some of a root, of which I send you a sample.

“The history of the circumstances of the case, as accurately as I could obtain them, was as follows:—Between nine and ten o'clock A. M. of that day, two or three of the children of the family were observed to be eating certain roots which they had found in a ploughed field near the house, and which they supposed to be ground nuts, artichokes, or something that was innoxious. The boy first complained that he had pain in his bowels, and felt as if he had a call to a dejection, and was directed to go to stool; but very soon returned and said he could do nothing. In a few seconds he puked, and brought up, as an intelligent woman, who was present, told me, a teacup full of what she believes to be the recently masticated root. Upon questioning her particularly upon the point, she told me that the first impression made upon her mind after seeing the boy puke was, that the vomiting was occasioned by the root that he had eaten. Immediately after puking, he fell back in convulsions, which, with various remissions and exacerbations, continued till he died. A physician was directly called, who, believing the convulsions to be owing to the poisonous quality of the root which he had

eaten, endeavoured to excite vomiting, by administering what I supposed to be a solution of tartrate of antimony in water. I was told that the physician took his leave about one o'clock, having been unable to excite vomiting, and expressing an opinion, that the boy would continue but a few moments. I found the boy in a profuse sweat, and in constant convulsions. The convulsive agitations consisted of *tremors ; violent contractions and distortions, with alternate and imperfect relaxations of the whole muscular system ; astonishing mobility of the eyeballs and eyelashes, with widely dilated pupils ; stridor dentium ; trismus ; frothing at the mouth and nose, mixed with blood ;* and occasionally, *violent and genuine epilepsy ;* of which he had two paroxysms after I arrived, which was only about half an hour before he expired. The convulsive agitations were so powerful and incessant, that I could not examine his pulse with sufficient constancy to ascertain its character. Very soon after dissolution, and sometime before the natural warmth had become extinct, the limbs became remarkably rigid. With a view to empty the stomach, I attempted to get down Pulv. Ipecac in warm water, in which, although I succeeded tolerably well, yet I could not possibly excite vomiting,

even with the addition of frequent and active titillation of the internal fauces with a goose quill.

“The next day (Saturday) at 4 o'clock, P. M. rather more than twenty four hours after dissolution, I examined the body. The extremities were more flexile than usual after death. Upon turning the body on the left side, a quantity of greenish coloured fluid issued from the mouth. The viscera of the thorax and abdomen being exposed, nothing remarkable appeared, except a greater degree than common of distention from flatus. The stomach was distended to the capacity of at least three pints, from flatus, and about three gills of a muciform, greenish fluid, such as had flowed from the mouth; on the surface of which was plainly distinguished some of the masticated root. On this point the persons present spoke with confidence. There were no appearances of inflammation. I endeavoured to ascertain whether there were worms, but could find none. The liquid found in the stomach after exposure to the air for half an hour in a vessel, assumed a dark green.

“Highly interested to know what the root was which had caused the boy's death; immediately after he died I went to the ploughed ground

whence he procured it, and soon found one of the same kind, entire, and of the size of a middling potatoe. It is, I believe, what botanists call a 'tuberous root.' I broke off one of the knobs or buds, by which it was unequivocally ascertained to be of the same kind of that of which he ate a portion, and of which a piece was preserved. I planted the root which I found in my garden; and perceive that its sprouts already begin to appear above ground; so that I flatter myself the ensuing seasons will develop its botanical character. The specimen which I send you, is a knob broken off from the main body of the root which I planted in my garden; and will, perhaps, at once, be recognised by you. If it should not, I hope ere long to exhibit the vegetable in its perfect state, and thereby obtain from your kindness its botanical name and character."

KALMIA LATIFOLIA.

I BELIEVE that no narcotic effect ensues from this shrub in any case where a moderate quantity is taken. Dr. Osgood of Danvers informs me, that having chewed and swallowed five or six large leaves at once, he was affected with head-

ach and vomiting in consequence. Whether this effect was owing to a peculiar quality of the leaves, or merely to the large amount of a crude, resinous substance taken into the stomach at once, admits of some doubt. At any rate, if the plant be of a deleterious nature, the quantity requisite to produce ill consequences is greater than any person will probably be in much danger of taking at a time.

PODOPHYLLUM PELTATUM.

Dr. BURGON, in the Medical Recorder, gives the following account of the medical operation of this plant. "The powdered root," says he, "is extensively employed as a cathartic in bilious complaints, and I am persuaded with as much success as jalap. I have often prescribed it, combined with calomel in the proportion of twenty grains of the former to eight or ten of the latter, and have uniformly been pleased with its effects on my patients. In this dose it is extremely prompt and efficacious. My experience enables me to state, that it is more drastic than jalap, and of course occasions more active catharsis, more severe griping, and makes a

more permanent impression on the system. Its operation, in all cases in which I have administered it, is slower than that of jalap, but it leaves the bowels longer in a lax and soluble condition. I once took twenty grains at four o'clock P. M. which gave me no disturbance till next morning, when its operation commenced and produced continual motions all that day and part of the next night together with severe tormina; this was the first dose of Podophyllum I had ever administered; and its effects being so decided, I have since prescribed it in a multitude of cases, and for the most part with similar results. Like most other drastic cathartics it is rendered milder by combining it with calomel, and hence, in most cases, this combination is to be preferred to giving it alone. It is more disagreeable to the stomach than common purgatives, and will oftener occasion emesis. In bilious affections it usually supercedes the necessity of an emetic previous to a cathartic, and hence two desirable effects are produced by one agent.

I was employed one afternoon in a close room in powdering the Rad. podophylli, which, by the next morning, occasioned a most violent inflammation of my right eye and eyelid; it yielded, however, to the antiphlogistic regimen in eight or ten days.

SYSTEMATIC INDEX

UNIT-BASED METHOD

TETRAZOLIA.

DENTISTRY

1875

OCTADRIA

EVNEANDRIA

DEC 1961

Phytolacca decandra

SYSTEMATIC INDEX

BY THE

LINNÆAN METHOD.

TRIANDRIA.

Iris versicolor.

TETRANDRIA.

Cornus florida.

Ictodes foetidus.

PENTANDRIA.

Datura stramonium.

Conium maculatum.

Hyoscyamus niger.

Cicuta maculata.

Nicotiana tabacum.

Gentiana Catesbæi.

Solanum dulcamara.

Asclepias tuberosa.

Menyanthes trifoliata.

Apocynum androsæmifolium.

Sabbatia angularis.

Rhus vernix.

Spigelia Marilandica.

Rhus radicans.

Triosteum perfoliatum.

Panax quinquefolium.

Lobelia inflata.

Statice Caroliniana.

HEXANDRIA.

Aletris farinosa.

Prinos verticillatus.

Erythronium Americanum.

OCTANDRIA.

Dirca palustris.

ENNEANDRIA.

Laurus sassafras.

DECANDRIA.

Kalmia latifolia.

Pyrola umbellata.

Rhododendron maximum.

Cassia Marilandica.

Arbutus Uva ursi.

Phytolacca decandra.

Gaultheria procumbens.

DODECANDRIA.

Asarum Canadense.

ICOSANDRIA.

Gillenia trifoliata.

Rubus villosus.

POLYANDRIA.

Sanguinaria Canadensis.

Liriodendron tulipifera.

Podophyllum peltatum.

Magnolia glauca.

Nymphæa odorata.

Illicium floridanum.

Coptis trifolia.

Ranunculus bulbosus.

MONADELPHIA.

Geranium maculatum.

DIADELPHIA.

Polygala senega.

Polygala rubella.

SYNGYNESIA.

Eupatorium perfoliatum.

Solidago odora.

GYNANDRIA.

Aristolochia serpentaria.

MONECIA.

Arum triphyllum.

Juglans cinerea.

DICECIA.

Xanthoxylum fraxineum.

Myrica cerifera.

Humulus lupulus.

Juniperus communis.

Euphorbia ipecacuanha.

Juniperus Virginiana.

Euphorbia corollata.

POLYGAMIA.

Veratrum viride.

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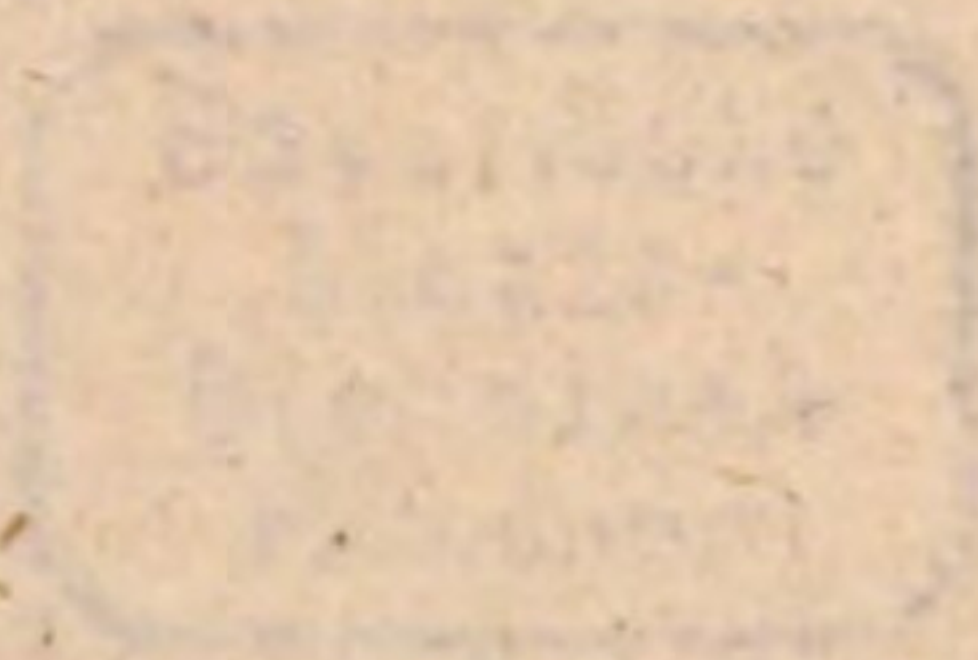


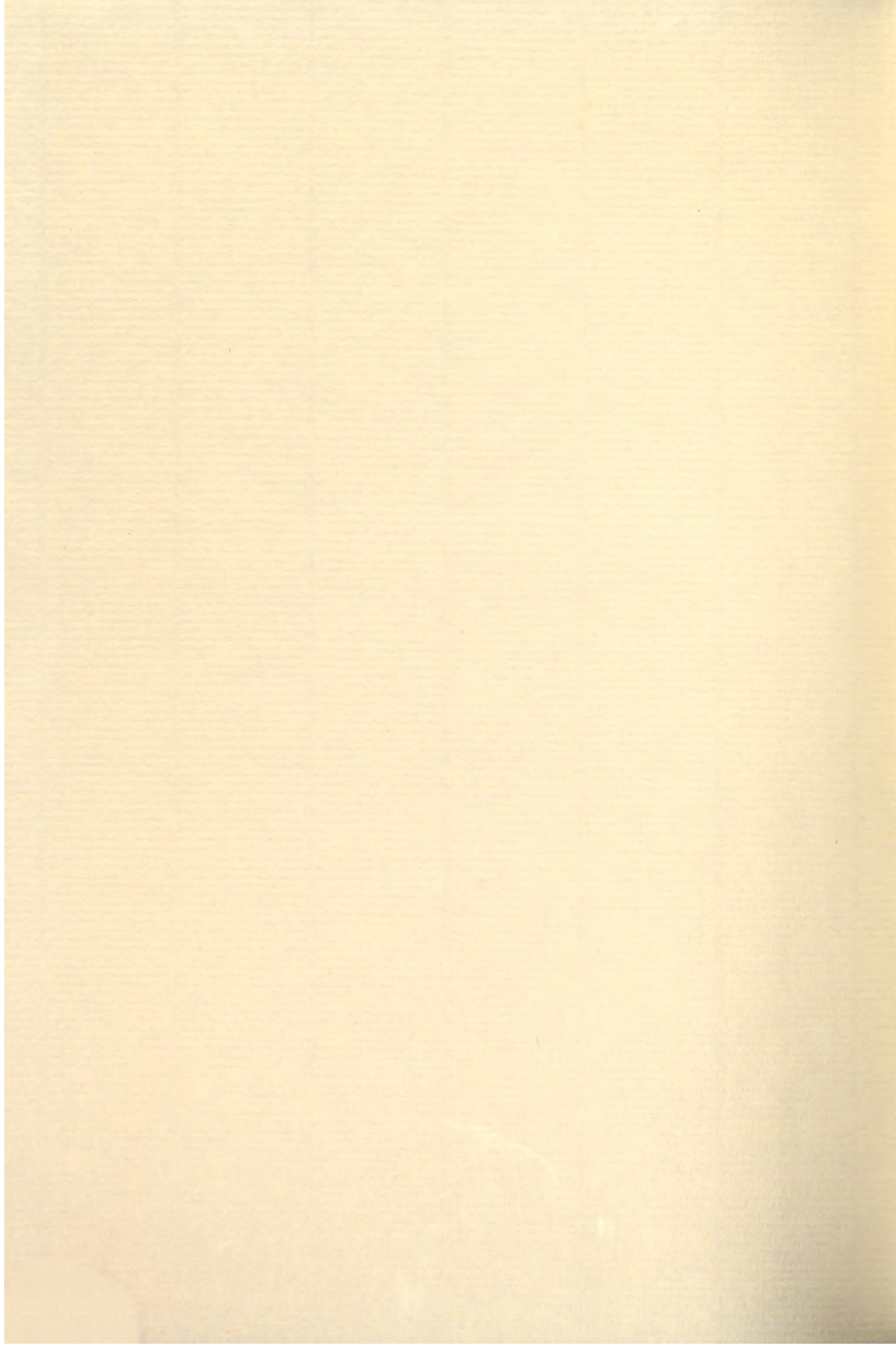
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Bigelow, Jacob

American Medical Botany being a Collection of the Native medicinal Plants
of the United States, containing their Botanical History and Chemical
Analysis ...
Bd.: 3,2

Boston [1820]

M.med. 121 m-6

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